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Telephony

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VAC Guaranteed Circulation This Issue 12,946 of Which 12,348 is Paid

TRUCKS A'ROLLING

Telephone construction trucks and crews start rolling in the Spring to put in more plant to meet increased service demand. Here a pole is being placed with modern hydraulic derrick.

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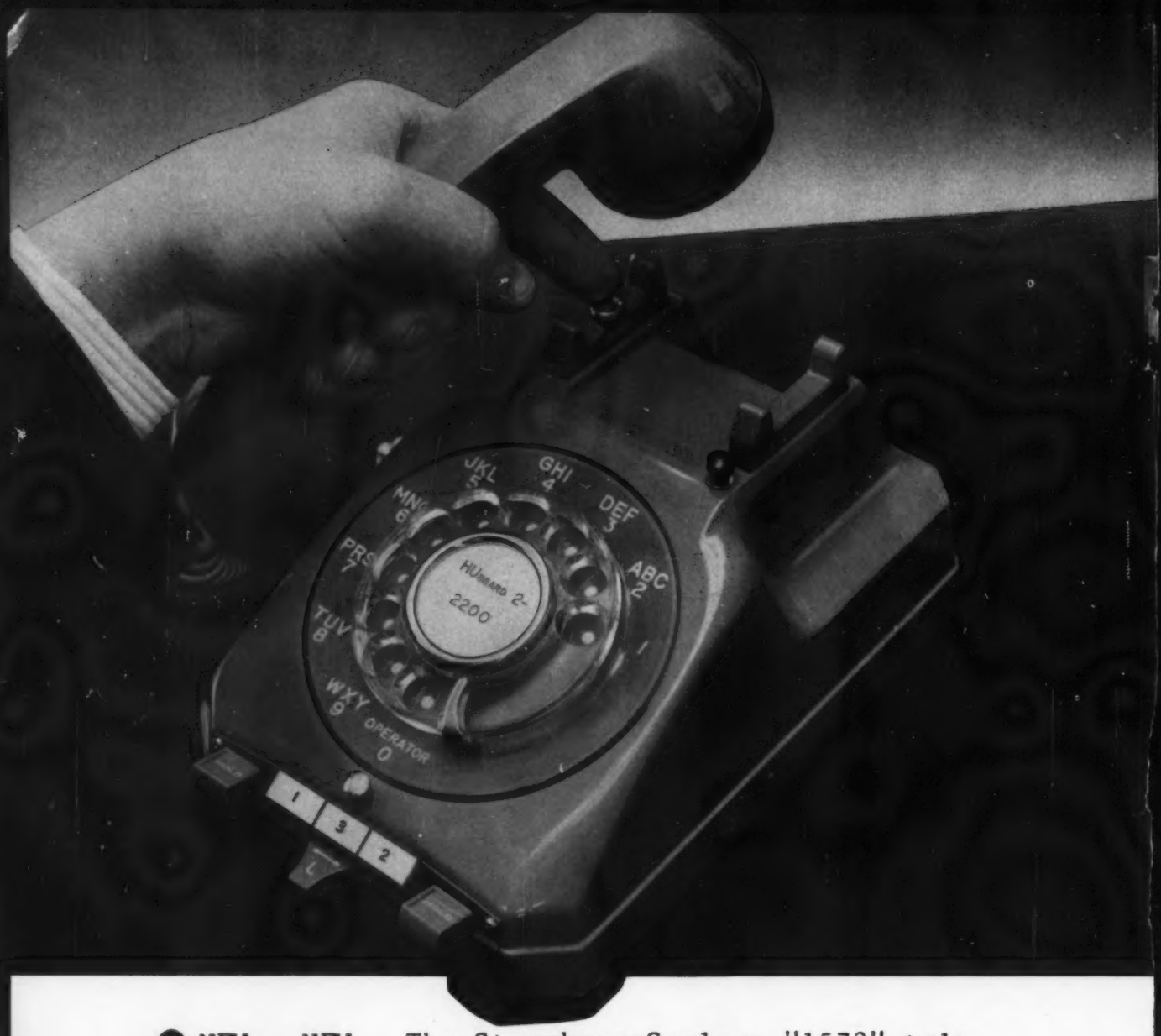

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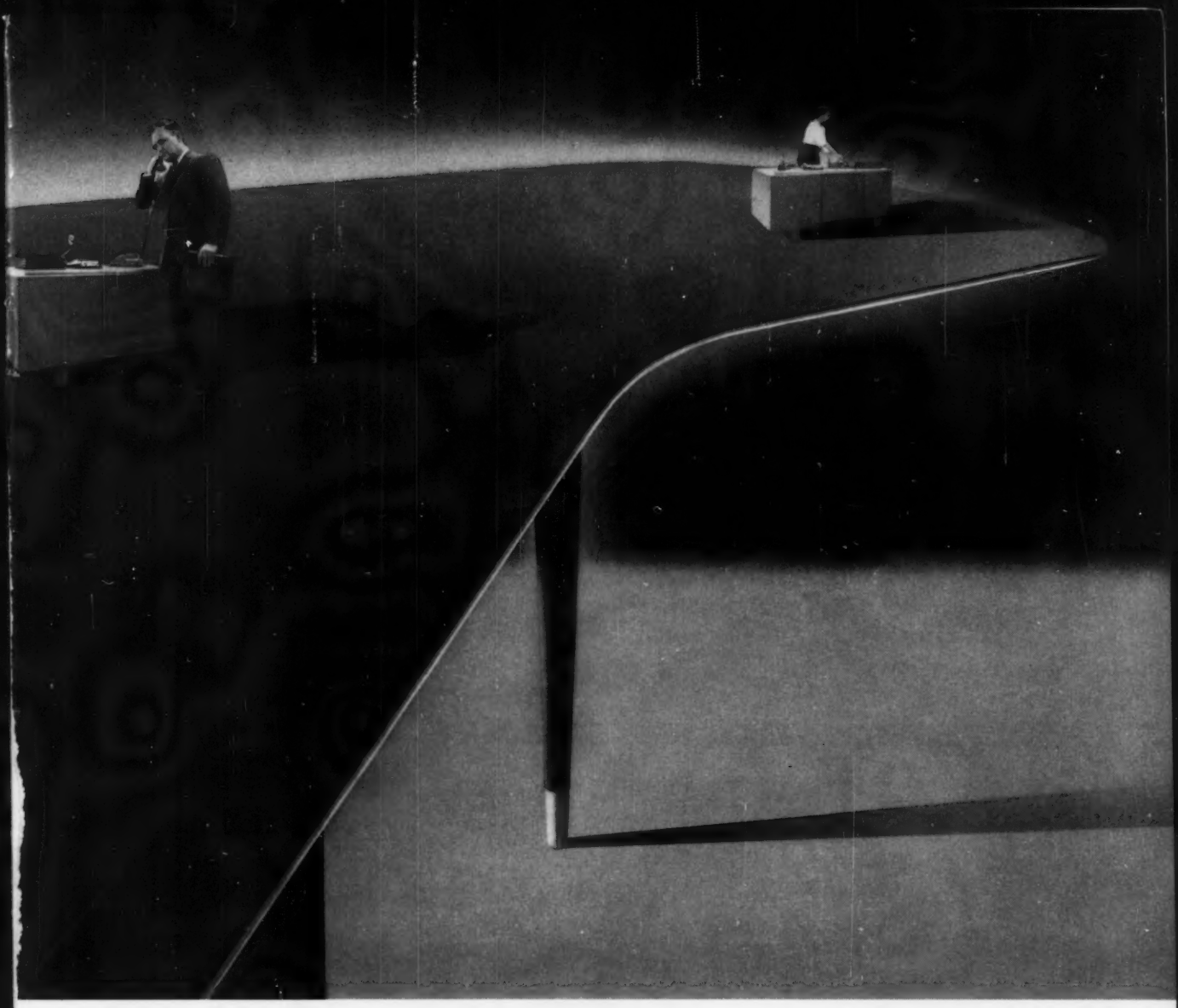

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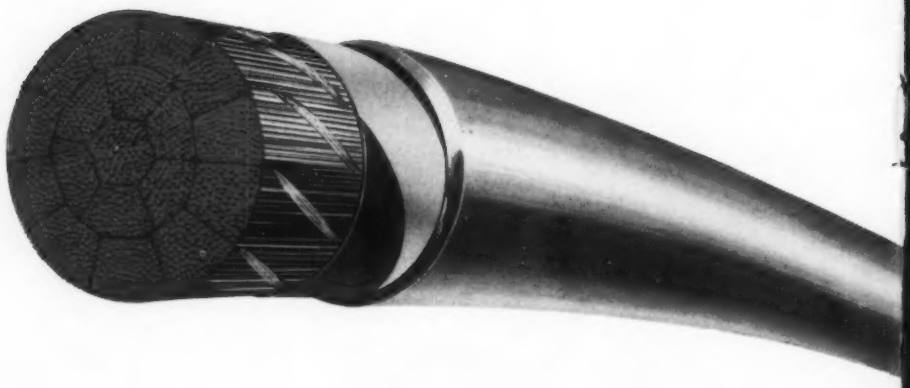

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Started in 1923 as Warehouseman

FLASHES AND PLUGS

GRASS ROOTS. A conscientious young precinct captain was making a telephone canvass of her neighborhood when one of her calls was answered by what sounded like a small boy.

"Let me speak to your father or mother," the caller requested.

"They're not at home," the youngster replied.

"Well is there anyone else I can talk to?" she asked.

"My sister," came the reply.

"Well, put her on," the politico instructed.

There ensued a long silence, then the little boy's voice finally came back on the telephone:

"I'm sorry, I can't lift her out of the play-pen," he said.

•

GREATEST SHOW ON EARTH! On the first day of school the teacher asked each first grader his name and what he wanted to be when he grew up.

One little tow-headed chap, the son of a telephone operator, spoke up importantly, "I'm Jimmy. When I grow up I'm gonna be a lion tamer. I'll have lots of fierce lions and tigers and I'll walk in the cage and . . ." he hesitated, then continued, "but, of course, I'll have my mother with me," he concluded.

•

AIR BORN? A mother recently called the office of an airline and made plane reservations for herself and for her two-year-old son.

"Will I have to pay for him?" she asked.

The agent replied that she would have to pay half fare for the boy.

"Look," the mother said, in a confidential tone, "he was a premature baby and if he'd been born when he was due, he wouldn't be two yet. Does he still have to pay?"

•

SUDS-SAFE MUSIC-MAKER A music pillow-phone keeps patients happy and content in some English hospitals. It plays soft music that the patient listens to without disturbing others.

And to keep it suds-safe and sanitary according to hospital rules, its housing is a washable plastic case.

•

NO CHEATING HERE. The Associated Press reports that a city tax officer in Dallas complained that a tax check was too small.

"It's 12 cents short," said Norman Register, director of taxation and revenue, when he looked at the final payment by Southwestern Bell Telephone Co. for its 1957 city taxes.

Vic Mandeville, who delivered the check for the company, dug into his pocket and made up the difference.

The check was for $775,454.95.

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Telephony

THE JOURNAL OF THE TELEPHONE INDUSTRY
Since 1904

May 24, 1958

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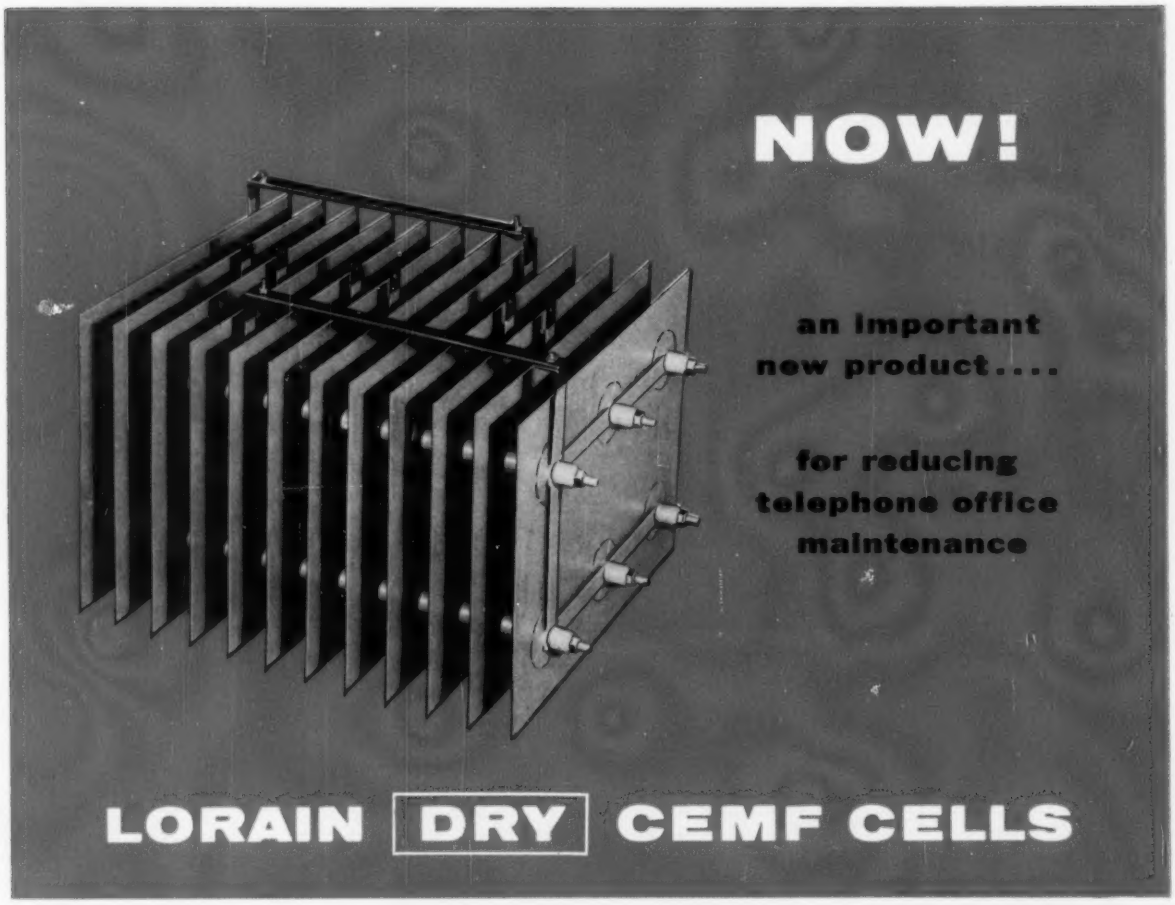

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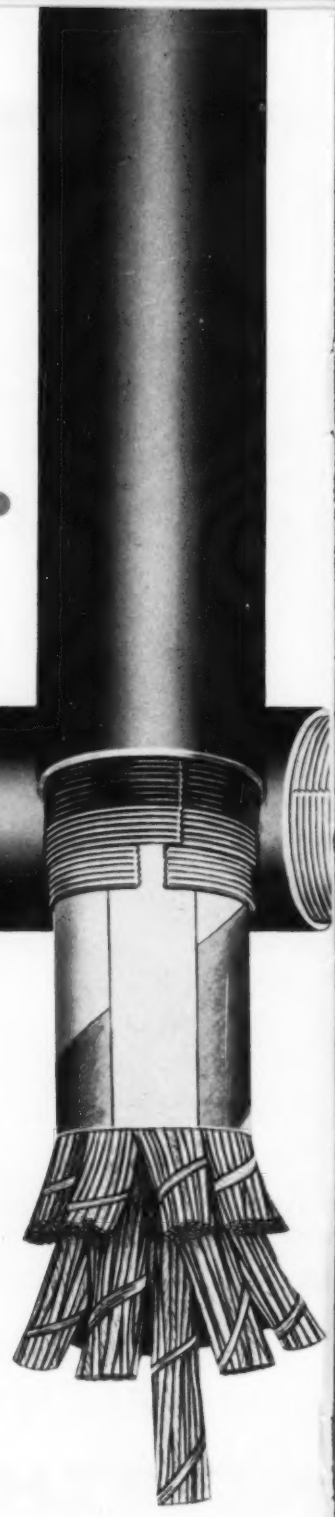

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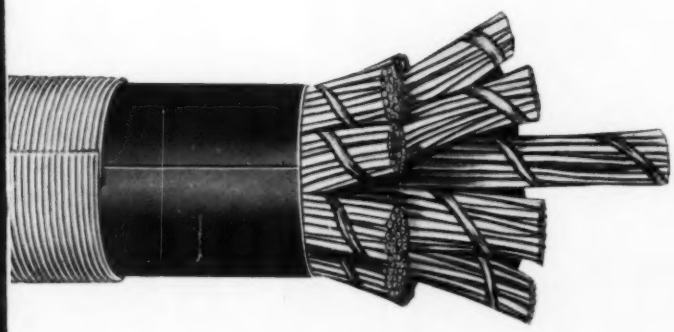

★ lightweight
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This advertisement in "The Saturday Evening Post" issue of May 24 tells the benefits of Lenkurt-Panhandle Subscriber Carrier to more than 10 million people across the nation!
needed, AE products are first in demand.
Does this, perhaps, suggest a solution for your problem?
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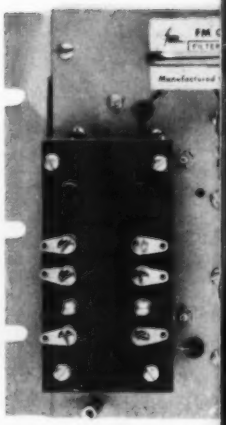

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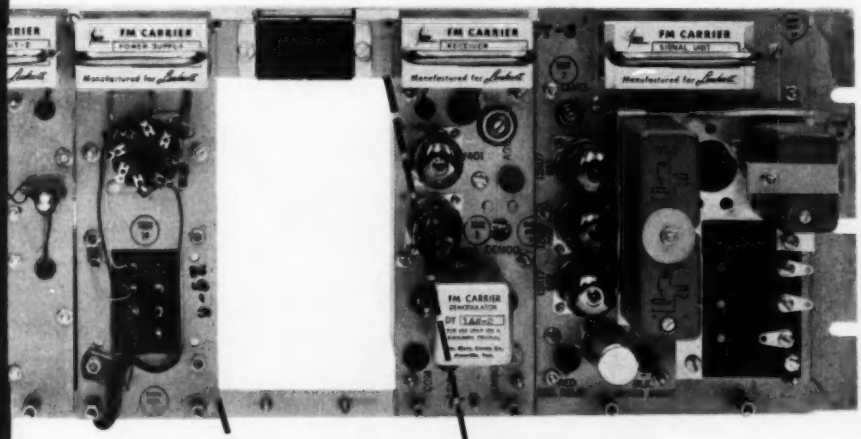
Millions learn the economy of

PANHANDLE CARRIER

—it may answer your rural service problems!



Lenkurt-Panhandle Subscriber Carrier provides all these advantages:

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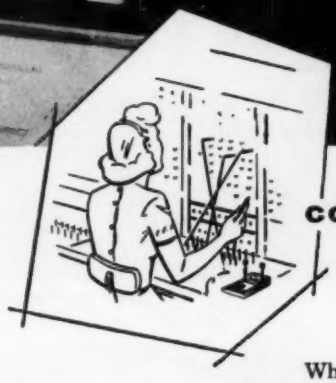

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Graflex Prize-Winning Photo by Josef Scaylea

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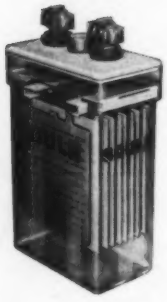

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More Power to you from Gould

Always Use Gould-National Automobile and Truck Batteries

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Some Second Thoughts on Rate-making

By FRANCIS X. WELCH*

BEFORE going into any specific aspect of rate-making under the prevailing inflationary climate, I would like to stress and discuss a rather fundamental question. It is a question which I am sure this audience can answer and answer correctly without hesitation, because your actual experience with the regulatory powers has taught you the answer the hard way—if you did not already know it. But I raise this question because of the appalling widespread misunderstanding about it which prevails in the public's mind and results in such confusion about the work of the commissions and what they are supposed to be doing.

The question is very basic and very simple. What is the main purpose of utility regulation? Or to put it another way, what is the principal objective, without reference to any supplementary or secondary objective?

Several years ago a professor, who teaches public utility regulation at one of the university law schools in Washington (and who happens to use my own "Case Book" on the subject), invited me to help him examine several candidates for a postgraduate degree in which public utility law was a credited subject. As I recall, there were about a dozen bright and handsome young men present. And I think I surprised them when I asked that same elementary question — What is the main purpose of utility regulation? But, I am sorry to say that not one could answer correctly, although several tried.

One said, as I recall, regulation was to keep rates from going too high. Another said it was to protect the public from exploitation by the utility company. Another said it was primarily a substitute for the usual force of competition which other lines of business experience in keeping their prices in line with the law of supply and demand. And, so it was with other answers. Some of these answers were very thoughtful. But all of them, in my opinion, were wide of the mark because they were obviously based on the all-too common idea that the main purpose of regulation is somehow keyed to a limitation of profit, to keep rates down, to keep prices in line, etc.

Naturally, I was eventually asked what I thought was the main purpose of regulation. And, the students seemed quite surprised when I said it was simply to provide service. That was the concept of regulation in the beginning, all the way back to Lord Hale's day, and is still the No. 1 objective. Obviously, the further consideration that regulation is to assure the public of service at reasonable rates, is an important condition. But, I put it to you, just as I put it to those students, that while it is possible to have utility service at a rate which might be regarded as higher than reasonable, or necessary, the converse of that proposition could never be true. It would not be possible to have a reasonable rate without any service at all. You have to have the service first, and *then* consider the rate, or you are putting the cart before the horse.

Stressed by Courts, Too

I mention this solely because there is a tendency to lose sight of this very elementary consideration. I have seen this idea, that rate-making should be the predominant goal of regulation, repeated time and again even in court decisions and textbooks. I once read a court opinion in which it was stated that the objective of Congress in passing the Natural Gas Act was to assure the public of the lowest possible rate. After I read that decision I went back and looked at my copy of the Natural Gas Act, turned it over and over, and almost inside out, but I failed to see mention of lowest rates or even low rates in the act. It does mention reasonable rates as do many other regulatory statutes.

Yes, this obsession with a profit limitation is responsible, I believe, for a good deal of unnecessary controversy about regulation today. As you may recall from the history of regulation, the service of railroads and other common carriers was regulated in this country years before any rate regulation was imposed at all. In other words, the first problem was to prevent the utility company from taking advantage of a natural monopolistic position, which it might well do through failure to make service available to all, and without discrimination. Then, of course, it inevitably followed, sooner or later, that regulatory control had to include some supervision of the rates, in order to *protect* the availability of this service to the public as a whole.

So, if we look at rate-making in that light, it becomes immediately apparent that the regulatory responsibility cannot be slanted entirely in one direction, mainly to keep rates down or as low as possible. There is an equal responsibility to keep the service going in the public interest. If the ability to serve is impaired over the long run by the denial of a reasonable rate, the public interest is just as grievously violated as it would be if the utility company were permitted to take advantage of the absence of area competition in order to charge a rate unnecessarily or unreasonably high.

Put it another way, the goal of regulation should be the same as the goal of management — a successful enterprise, because after all it is only a successful enterprise that can assure good and continuous service. And, if the public is not assured of good and continuous service, what difference does it make *what* the rate might be in the long-run. Quibbling over rates without service would be like the old story of the 10-cent steak. You may have heard of the housewife who criticized her butcher for asking $1.25 a pound for a good cut of beefsteak. She claimed that his rival, Mr. Jones, down the street was selling the same thing for 90 cents

*This is an address given by Mr. Welch, our Washington editor, before the convention of the Midwest Association of Railroad & Utilities Commissioners held on May 14, 15 and 16 in Little Rock, Ark.

a pound. But, when her butcher asked her why she didn't buy her steak from Mr. Jones, the housewife said: "Why, he is all out of it!" So, then, the butcher replied that if *he* were all out of beefsteak, he could sell it for 10 cents a pound!

Good Service Basic

I have tried never to take a dogmatic position with respect to any rate-making formula. But, I have often had differences with those who do take such an uncompromising position regardless of changing conditions, including the inflationary period through which we have been passing for more than a decade. To be realistic, I believe that rate-making has to be approached primarily from this basic standpoint of good public service, which I have already touched upon. And, if we would be honest and look at the condition of some of our utility industries today, we would have to admit that there are some who could not earn a fair return under any conditions, no matter what their rate might be.

I refer to railroad passenger service in some cases, and to urban transit service in other cases. Why have these public services come to this condition? Is it the fault of rate regulation? Probably not; certainly not as a major factor. The principal difficulty with these carrier utilities has been a return of competition, which always makes regulation unnecessary. They no longer have a monopoly or even a semblance of a monopoly because of private automobiles, trucks, airlines, etc.

For them competition has now become the real regulator so that conventional utility rate regulation is hardly useful any longer. If, because of legalistic requirements, we must continue to require rate regulation of these carriers, it is obviously futile to apply the traditional approach of rate base and return, or go to the endless time and expense of determining such matters. Newer and different approaches, such as the operating ratio, must be developed. And, as we have seen recently, actual tax credits or subsidies may be necessary to keep the wheels turning. The regulators, bearing in mind their basic responsibility to keep essential public service in operation, must assist and cooperate with transportation management in this area.

I mention this class of relatively unprofitable utility service, for which traditional and legalistic regulation is coming to have less meaning, so as to point out that we cannot be sure that *only* the railroads and the urban transit carriers will be found in this class for the indefinite future. Who can tell what the effect of the discovery of new fuels, such as nuclear power, perfected to a point of a competitive basis to coal, or new techniques, such as the heat pump, or increasingly expensive natural gas production, will have on our gas and electric utility 10 years from now?

But, such drastic changes are far in the future, perhaps decades. Let us confine ourselves to the problem of utility rate-making in the category which is still relatively profitable, and which is still subject to regulatory limitations on the return allowance. That would include gas, electric, and telephone, in most cases.

Trend to Fair Value

It is not my purpose to burden you with another plowing-up of that much harrowed ground of the Cost *versus* the Value rate base. We might start off with an agreement that the majority of state commissions (some 27 or 28 as I appraise them), as well as the federal commissions, still adhere to an original cost or prudent investment rate base or some similar variation of cost. About 17 state commissions now recognize, or have been directed by their courts, to recognize some element of present fair value. But, I think we would have to be rather stubborn or set in our views if we did not concede that there has been a noticeable trend toward recognition of the present fair value element since the end of World War II, and the beginning of the period of sharp inflation through which we are still passing.

During the past 2½ years, courts in Alabama, Arizona, Indiana, Iowa, Missouri, Montana, New York (telephone), North Carolina, Ohio, and Pennsylvania have upheld the fair value principles that were inherent in the basic regulatory laws of those states. True, the Maine legislature in May 1957, passed a bill which provided that the commission, in valuing the property of any public utility, "shall not include current value." This was offset by the action of the Minnesota legislature in passing a bill making it mandatory that in fixing telephone rates the Minnesota commission should take fair value into account.

Now, what is not generally understood is that in the great majority of states the present rate base practice has been largely the result of commission-made or judge-made law. And, that is true even in those states, such as Louisiana, New Jersey, and Virginia, where the words "fair value" appear in the statute. Those commissions have construed "fair value" to mean original cost; and they have been supported by their courts. And, that was that. Yet, if many of these state commissions on an original cost base, including some here in the Middle West, wanted to turn around tomorrow, and give some recognition to current cost or reproduction value, I dare say they could do so under their present laws, without changing a comma.

It is not generally realized perhaps that in the 43 states which have commissions with jurisdiction over electric and gas utilities, the laws in 40 of these states do not specifically prohibit the fair value principle. So, that brings us out of the legalistic realm of statute and into the more practical area of economic requirements.[1]

Most of the original arguments against the present fair value rate base were those of expediency rather than of justice or fundamental fair treatment. And, as long as the end result is just, an expedient reason may justify itself. I say this, not-

[1]An analysis of the rate base provisions of various state laws (with text excerpts) in this respect was made after the Hope decision in 1944. "State Laws in Relation to the Hope Natural Gas Decision," by Charles A. Esser. PUBLIC UTILITIES FORTNIGHTLY, Vol. XXXIV, No. 2, July 20, 1944, p. 69. Some of these statutes have been changed since that time, but most of them are still in the wide area of commission discretion.

Seek Excise Tax Cut

President Eisenhower advised Congress on May 14, that the administration soon will offer legislation calling for reducing to 6 per cent the present 10 per cent tax on local telephone service.

The purpose of the legislation would be to make available to states a source of tax revenue to partly offset a reduction in federal grants for vocational education and construction of water treatment facilities.

In a letter to Speaker Sam Rayburn, the President said the budget bureau will send up legislation to cover such recommendations as a commission on intergovernmental relations and a joint federal-state action committee set up last Aug. jointly with the governors' conference.

Under it, the federal government would discontinue annual grants of 50 million dollars each for vocational education and waste treatment construction. Revenue from the 4 per cent of the telephone tax to be made available to states was estimated at 150 million dollars a year.

The President said that the present sewage construction program would not be affected "since adequate time would be allowed for an orderly readjustment."

withstanding the fact that all or most of the objections to the earlier method of valuation have been met by present-day valuation techniques which are just about as quick, convenient, and accurate as original cost methods. I refer to the use of index numbers based on original cost data which can be used for bringing price information up to date. Even inventory type of appraisal can be readily ascertained by present-day pricing methods which are a far cry from the old physical observation appraisals which led to so much criticism that they were little more than "guesstimates."

Cost Accounting

And, it was in this period of rebellion against crude appraisal methods of valuation that accounting techniques became so firmly established. Regulation is undoubtedly indebted to these advocates of strict cost accounting, going back 30 years or more, who advanced a new system for classification of accounts related primarily to original cost. But in the beginning it was expected that this accounting was *only* for bookkeeping purposes; and need not necessarily be related to rate-making value. I could cite case after case where just such an argument was made in defense of the establishment of uniform classification of accounts.

Just the same, the very existence of the cost accounting systems, with their outward semblance of accuracy, and completeness, naturally appealed to many commissions as a more satisfactory way of dealing with this tricky problem of rate-making value. And so, led by the Federal Power Commission, and under the influence of a temporary deflationary climate of the depression and post-depression period, along with a political climate favorable to regulatory reform, a majority of our regulatory tribunals espoused a strictly cost basis for rate-making, even to the point of excluding evidence based on any other measure of value. That is still the situation in most states today.

Now, as long as there was a relatively stable dollar and the end result would render at least rough justice for the utility investor, as well as for the utility consumer, complaint against the cost base did not reach serious proportions. But, even so, it must be conceded that the intrusion of a cost concept, or what Professor Walter A. Morton of the University of Wisconsin calls "a nominal value concept," inevitably results in a fictitious value as compared with the real value of property. No matter how good a thermometer you have, it has nothing to do with controling the weather. It can only reflect the weather.

1958 Convention Calendar

Association	*Date*	*City*	*Hotel*
Maine-New Hampshire-Vermont*	June 3, 4 and 5	Rockland, Maine	Samoset
California	June 4, 5 and 6	San Francisco	Sheraton-Palace
New York	June 16, 17 and 18	Schroon Lake	Scaroon Manor
Oregon-Washington*	June 19, 20 and 21	Portland, Ore.	Multnomah
Alaska	Aug. 11, 12, 13	Juneau	Baranof
Michigan	Sept. 9, 10 and 11	Grand Rapids	Pantlind
Arkansas	Sept. 15 and 16	Hot Springs	Arlington
Rocky Mountain	Sept. 17, 18 and 19	Salt Lake City	Utah
West Virginia	Sept. 24 and 25	Davis	Blackwater Lodge
North Carolina	Oct. 6 and 7	Pinehurst	Carolina
USITA Annual convention	Oct. 13, 14 and 15	Chicago	Conrad Hilton
Virginia	Oct. 30 and 31	Roanoke	Roanoke
Oklahoma	Nov. 5 and 6	Oklahoma City	Huckins
South Carolina	Nov. 5 and 6	Clemson	Clemson House
Alabama-Mississippi*	Nov. 10 and 11	Unannounced	Unannounced
Georgia	Nov. 12 and 13	Savannah	General Oglethorpe

*Joint Convention

Not Used in Other Fields

We do not use this nominal value concept in any other field of business operation for which regulation is supposed to be a substitute, as far as the utility business is concerned. We buy and sell real estate, houses, and automobiles and we tax them—all on an ad valorem basis, for the most part, periodically adjusted to changing prices. And, if we go back into the history of cost accounting itself we can find no historical evidence to support the view that book costs were to be used without regard to real value, or even in such a way as to expropriate a part of the real value of property through the regulatory process. Historically, the original cost concept of accounting was that of a convenient method for systematic registering of property inventories, for reasonable intervals between physical valuation procedures.

Nevertheless, nominal cost regulation, once in the regulatory saddle, continued to grow and extend its influence. And, as long as the results were not too far out of line with the reality of actual values, it was not seriously challenged. But, with the inflation following World War II, we have had to face a new situation in which the United States dollar lost almost half, or 47 per cent, of its purchasing value in the 16-year period between 1941 and 1957. That is a long-range average loss of 4 per cent a year. And, the process is still going on.

Nobody in this room will seriously argue, I am sure, that we can expect an end to inflation in the period ahead any more than we have experienced during the past 65 years. I can give you three fast reasons why. First, we have taken on the expensive job of world policing, with incidental vast costs of armaments and taxes. Second, pressure groups — farm, labor, and various forms of protective tariffs— are in the ascendancy, as will be seen from the present unusual spectacle of prices rising even during a period of economic recession. Third, we have abolished deflationary influences which served in the past as periodic correctives in the interest of stabilizing the currency. We no longer permit a recession to run its course. We must have unemployment compensation, public works, and tax cuts, all of which tend to feed the inflationary fire.

Now, I put it to you that if this annual average loss of purchasing power continues at the rate of 4 per cent for another 16 years, as it has in the past 16 years, would there be a commissioner here who would say that we could continue to carry on the myth of relating cost to value for rate-making purposes for utility properties. Trouble is, if that happens, you may not be able to find very many utilities still operating as private profit ventures. It may be that some mighty smart people out in "left field" have figured it out just that way.

French Utilities Example

Consider what happened, for example, to the French franc. Since 1914, it has lost 99½ per cent of its value.

(Please turn to page 45)

West Coast Switches To Small Cars

By L. A. GRITTEN*

Volkswagen "Transporter" used for installation and repairs by West Coast Telephone Co.

THE WEST Coast Telephone Co. of Everett, Wash., is one of the many utility companies that, as a matter of operating economy, have recently invested in small foreign-made automobiles. The West Coast company is the 10th largest Independent in the United States and operates over 156,000 stations in 73 exchanges in Washington, Oregon and northern California. In 1957, the company installed 44,522 services and disconnected 33,705 services, making a net gain of 10,817 stations.

The company's exchanges are widely scattered over an area roughly 540 miles from north to south and 300 miles from east to west. The largest exchange is in the city of Everett, serving a population of 64,000 and about 25,000 telephones. So efficient and economical transportation of men and equipment is of vital importance to this company.

After a thorough test of various makes and models, Ralph Greenleaf, supervisor of motor vehicles for the company, recommended the adoption of the Volkswagen. In late 1957, the company purchased nine Volkswagen "Transporter" trucks. Mr. Greenleaf designed and installed their interior arrangements for use as service trucks, completely equipped for practically every requirement of telephone line and equipment installation, and for service repairs. Everything that the installer or repairman may require is readily accessible and conveniently located, including an ample supply of variously colored telephones.

The results have been so satisfactory in every way that another nine Volkswagen trucks have been purchased. The first cost is far less than that of the conventional American vehicles that they are displacing. The saving in operating and maintenance cost is roughly one-half. The Volkswagens, fully loaded, on short-haul jobs around the city, run about 20 miles to the gallon of gasoline compared with 10 miles per gallon for the conventional American trucks.

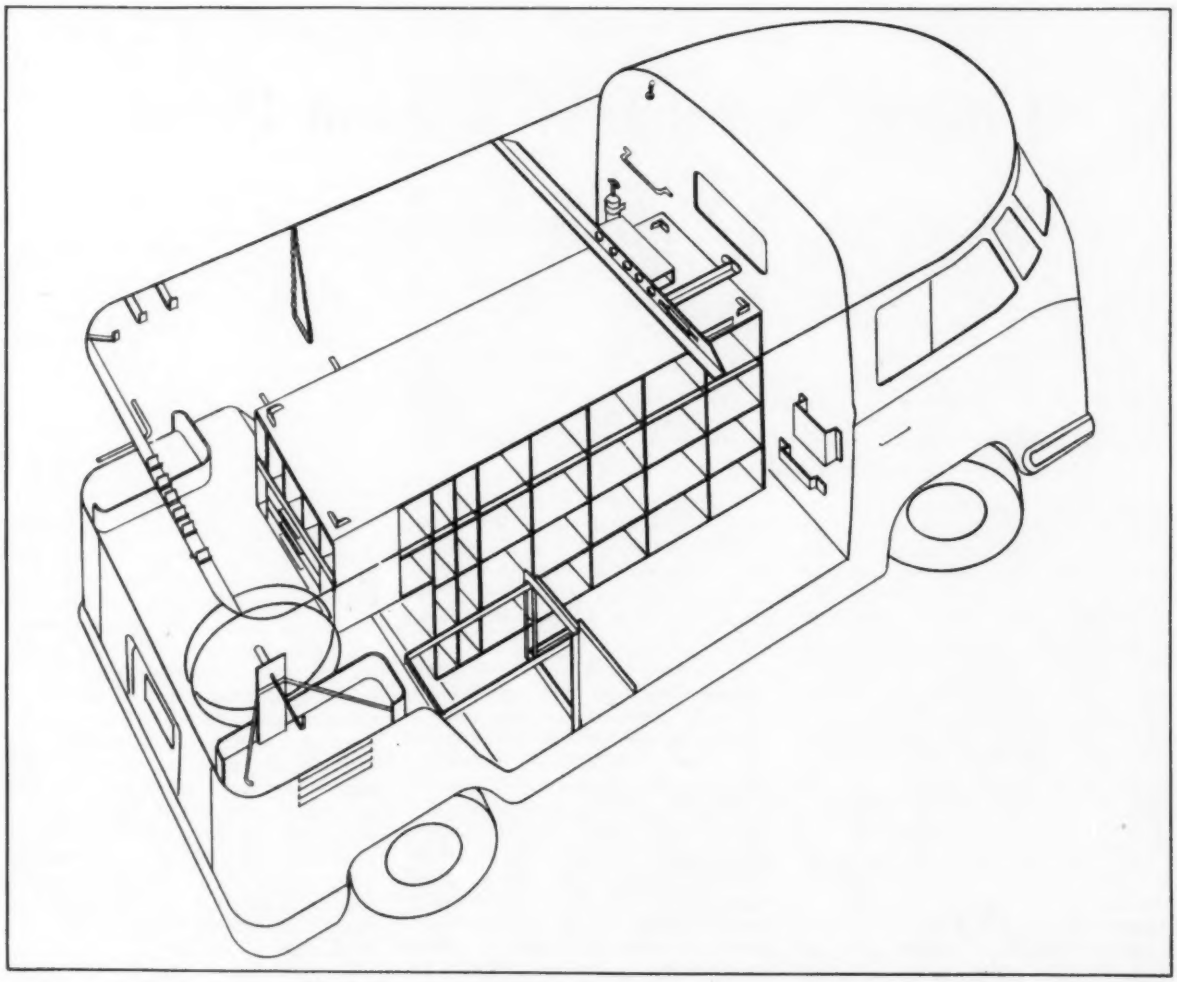
Oil consumption is halved. The cost of tire replacements is very much less. Performance to date indicates that a set of tires on the Volkswagen, costing about $120, will have a working life of about 60,000 miles. Having air-cooled motors, the use of anti-freeze and the repairs normally associated with radiators, cracked blocks and water pumps, are eliminated.

Their unladen weight is about one-half that of the conventional vehicles, yet they are comfortable and they drive well. With torque suspension, they take the shock of ruts and chuckholes better than most heavy vehicles; and they can be turned abruptly at corners with a minimum of body sway. Their road traction is excellent and well balanced. The men who use them are their best advertisement. The installers and re-

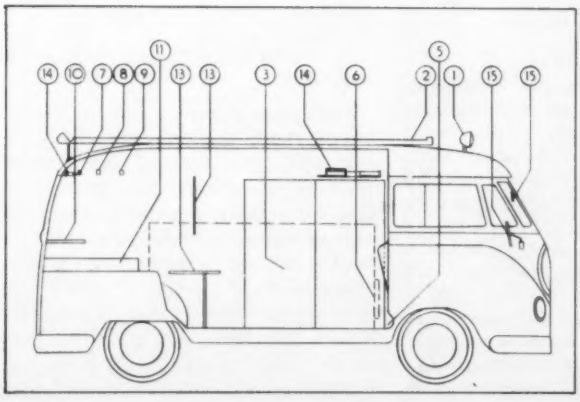
(Please turn to page 53)

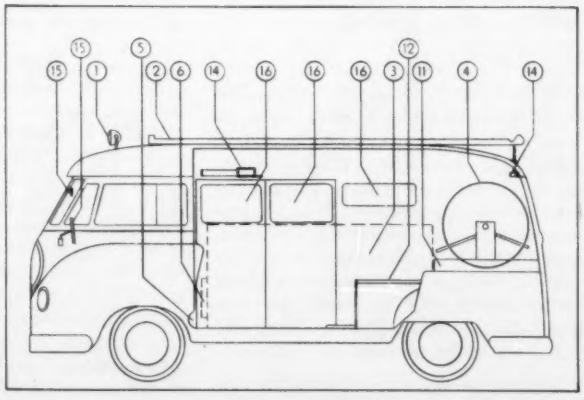
Mr. Gritten is Publicity Supervisor of the West Coast Telephone Co. of Everett, Wash.

Interior arrangements of Volkswagen "Transporters" used by West Coast Telephone Co. See drawings on opposite page.



Over-all drawing of Volkswagen showing interior arrangements.





Legend for two diagrams above which shows schematic arrangement for carrying tools and supplies in Volkswagen "Transporter" as designed by West Coast Telephone Co. (1) Spotlight; (2) 20-foot extension ladder rack; (3) bins and shelves; (4) wire reel; (5) five-foot shovel and ground rods; (6) saw and machete; (7) hook for lineman's belt; (8) hook for climbers; (9) hook for hand line hook; (10) bracket for lineman's belt; (11) miscellaneous line tool compartment; (12) inside wire cases; (13) iron, copperweld, and extra coil duplex; (14) sectional pike and tree pruner; (15) mirrors; (16) windows—put in by body man.

Underground Distribution Plant in Urban Areas

By C. H. ELDER*

COMPLETE underground telephone distribution plant is not new or original. It has been in use for many, many years—and has provided a very satisfactory and remarkably trouble free plant. Prior to the advent of a protective covering for lead sheath cable it was placed in conduit and spliced and terminated in manholes or small handholes. Some companies in small communities had good success with plain lead sheath buried directly in the earth between houses, and running through basements or along rear walls for distribution purposes.

Cables suitable for direct burial in the earth were developed in the late twenties which, together with pedestal type terminals, opened a new field for buried construction. Within the past three decades thousands of miles of inter-city trunk and toll cables have been plowed or trenched in cross-country. Over the years many high grade residential subdivisions demanded all buried plant and the telephone company was reimbursed for the excess cost over that for conventional aerial plant.

Cost Factor

To provide the best service possible at the lowest practicable costs, construction of telephone plant whether it be cables in conduit and manholes, buried in the ground or placed aerially on poles, must be predicated on sound economics and good engineering judgment. Underground conduit systems are essential in all major cities as a backbone feeder plant, and as such, are economically sound as well as being the only practicable engineering solution.

Underground conduit systems for distribution plant are obviously prohibitive cost-wise in urban areas of individual homes. Buried cross-country inter-city trunk and toll cables are economically sound and, with well-known plowing techniques and methods, have been in close competition cost-wise with pole lines and aerial toll cables. Until very recently, however, it has been considered impossible to construct an all buried distribution system that could compete on a first cost basis with aerial plant.

In the first place, lead sheath paper insulated conductor cable, the standard for many years, has been a generally satisfactory product for aerial distribution plant. However, all splices and terminations must be completely waterproof as the paper insulation will otherwise absorb moisture. For this reason, when buried in the ground with splices and distribution terminals at about every other lot line, this type of facility has been costly to install and terminate. Rearrangements and repair operations wherever sheath failures, splicing defects, etc., did permit moisture to enter were expensive. Secondly, pole timber has been relatively cheap. Also, there has been a lack of suitable earth trenching machinery with sufficient power and maneuverability for digging the feeder and service entrance trenches.

New Cable

Scientists and inventors working on ways of overcoming the disadvantages of paper insulation experimented with a plastic insulated conductor cable. Some of it was placed on field trial for three or four years before becoming available for general field use in limited quantities in 1954. Since this cable, with its plastic insulated conductors, is unaffected by moisture that may be in the atmosphere, new terminating and splicing techniques came rapidly and soon resulted in a new line of terminals of the so called "Ready-Access" type. Because of its resistance to moisture it appeared to be especially applicable to underground installations.

*Mr. Elder is Outside Plant Engineer of Illinois Bell Telephone Co. and he presented this paper at the 1957 Signal Corps Wire and Cable Symposium.

New Tools

Still needed, however, was suitable equipment for placing the cable and wires underground. Large trenchers and plows had been successfully used for several years in placing cross-country toll cables and rural plant underground with favorable cost results. Complete buried distribution systems in urban areas, however, presented an entirely different set of conditions that limit, for the most part, the mobility of large tractors and plows or large trenching machines and backfilling machinery. Even the larger subdivisions, organized and planned for economical mass production, do not develop with sufficient rapidity to justify the use of heavy earth moving equipment for telephone plant.

Early in 1954, it became apparent that the proper approach to more economical complete buried distribution systems could be realized by the use of small, sturdy trenchers easily transported and operated by one man, that would dig a trench at a speed of 5 feet per minute, at least 30 inches deep, and only 2 to 3 inches wide for minimum backfill effort.

With these objectives in mind a well-known manufacturer was consulted who, after three years of experimental work, developed a small trenching unit that comes very close to meeting the original concepts, and is currently on the market at slightly over $3,600. There are, of course, a number of trenchers of different designs available now, some costing only a few hundred dollars which can be used for placing a complete buried distribution system. For the most part larger available machines are about double in price and open a trench 3 to 5 inches wider than necessary in favorable soil conditions, which increases backfilling costs.

Early Trials

Early in 1955, it appeared that development of plastic cable, ready-access terminals and the smaller trencher was far enough advanced to have a field trial. It was obvious that there were many unsolved problems which needed answers before underground distribution plant would be ready for general use. In order to appraise the tools and materials then available and to take a look at future needs, three Bell System regional conferences were held in the summer of 1955. Following these conferences several trial installations of buried distribution plant were started in various operating company areas, three of which were undertaken in Illinois Bell Telephone Co. territory.

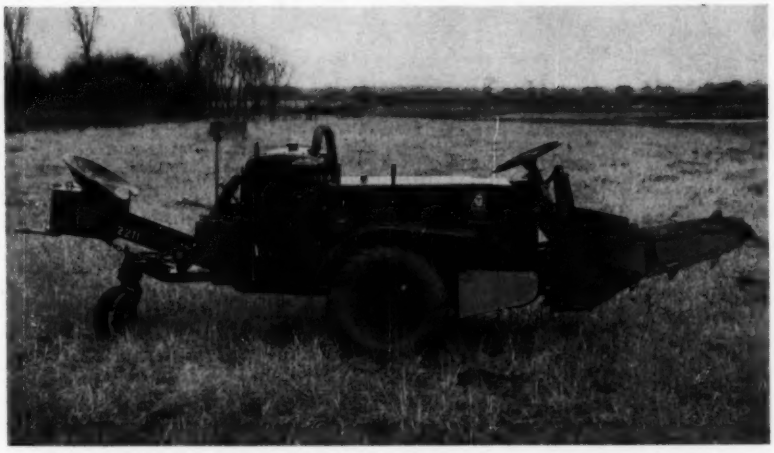
During the summer of 1955, three subdivisions were in the planning stage, each having certain characteristics that appeared to be of value in gaining further knowledge in the actual application of materials, equipment and methods to an all buried distribution plant. The first of these was in the Tarrytown subdivision in Gary, Ind. This subdivision was selected for the reason that it was readily adaptable to being divided into two equal areas of approximately 170 housing units each, one area for buried distribution, and the other for aerial distribution, which permitted a close comparison of the costs of buried *vs* aerial distribution plant.

Plans were prepared for the standard joint use aerial plant to be constructed in the aerial portion. Plans for the buried portion however, were somewhat unique for several reasons.

First, while the subdivider was very cooperative in every way, he had no particular interest in the buried plan. The power distribution system was to be constructed aerially throughout the subdivision, consequently there was no advantage to him in buried telephone plant from an appearance standpoint.

Second, while there was no coordination required with electric distribution systems, all of the sewer, water and gas utilities were in the rear lot easements which did require close coordination in regard to their respective locations and depths within the easement as well as in their approach to the subscribers' premises. And, third, the entire subdivision was almost pure sand which made trenching and back-filling easy but required extreme care in placing the cable and wire to avoid trench cave-ins.

The aerial portion was complete in the fall of 1955. The buried portion was started too late to avoid some work in frost down to a depth of 15 inches. The remainder was placed in late spring of 1956. There was no difficulty



Trencher used by Illinois Bell to install underground distribution plant.

in keeping up with building schedules, and service was available well in advance of the required service dates. The actual cost of placing the two types of distribution plant in this subdivision were as follows:

Aerial Plan (174 Lots)	Cost Per Lineal Ft. of Line	Cost Per Lot
Poles and anchors	$ .31	$10.02
Aerial cable, strand and terminals (Note 1)	.78	25.11
Aerial services (174) (Note 2)		6.50
	Total Aerial	$41.63

Buried Plan (164 Lots)	Cost Per Lineal Ft. of Line	Cost Per Lot
Buried cable and terminal (Note 3)	$1.05	$33.26
Buried services (164) (Note 4)		17.65
	Total Buried	$50.91
Excess Cost of Buried System (per lot)		$ 9.28

Note (1): Paper insulated conductor, polyethylene sheath, 24-gauge cable, 6M strand, T type terminals. Cable lashed from a moving trailer.

Note (2): The aerial drops were installed on a mass production basis, block by block, rather than on an individual service order basis. This resulted in a very low cost per drop.

Note (3): Polyethylene insulated conductor, polyethylene sheath, 19-gauge cable, treated wood pedestals, and ready-access terminals used throughout except for one block which was a completely buried installation with the service wires terminated in a buried splice case. (The terminals and splice cases at this stage were trial designs.)

Note (4): One B underground wire was used between the terminals and each subscriber's premises.

During the regional conferences it was recognized that a less expensive service wire than the B underground wire was needed for economical urban distribution purposes. B underground wire, an excellent medium for buried rural construction within the limits of its one-pair capacity, is a rather costly item for service connections and particularly so in any subdivision where two pairs appear essential to meet the various demands for service. These early trials clearly showed that the B underground wire was not the most desirable type of wire for service connection work in buried distribution systems. The 16-gauge conductors were much larger than required and, being relatively stiff, presented some terminating difficulties that were more noticeable when several pairs were brought into a terminal.

Accordingly, a new two-pair underground service facility, known as B service wire, was made available in 1956. It is comprised of four 20-gauge conductors insulated with solid polyethylene, distinctively color-coded. The quad is jacketed with a polyvinyl-chloride compound over which is applied a helically wound aluminum tape. An outer jacket of black polyvinyl-chloride compound covers the tape and completes the wire structure. This wire facility can be made at an attractive price and has excellent handling qualities.

It also became apparent that a better pedestal-terminal arrangement than the wooden post and KS or F type terminal was needed. Although it served the purpose it was not very attractive, did not readily cover the wires and cable, and was really quite expensive to install. Several different designs, some using steel fence posts with a transite covering were tried with various degrees of success, but the most satisfactory one yet developed was designed by the Wisconsin Telephone Co. in collaboration with the Utility Products Co. of Milwaukee.

The pedestal is a modified steel fence

LEFT PHOTO: Wisconsin type terminal and pedestal being used by Illinois Bell in underground distribution plant. RIGHT PHOTO: Typical block in new Illinois subdivision showing closed pedestal terminal.

post on top of which is mounted a base plate and housing. Within the housing are terminal blocks which may be arranged in combinations for splicing or terminating from 6 to 48 pairs, or for loading from 6 to 12 pairs. The cable is looped to the top of the terminal, and the post together with its cover completely enclose the cable and subscribers' service wires.

Terminating or joining of plastic cable conductors in these terminals is accomplished by connecting the wires directly to binding posts and can be performed by any of the craftsmen associated with the job. For the most part, any real splicing operation, and there need be very little, can be done above ground. These developments have gone a long way toward reducing the cost of buried distribution cable from that of a few years ago when using paper insulated cable required moistureproof seals in splicing and terminating.

A second trial with buried distribution plant was made in Springdale subdivision in Western Springs, Ill., about 15 miles west of downtown Chicago. Both the telephone and electric distribution plant is being placed underground within the rear lot easement; the sewer, water and gas utilities being served from the street. The subdivision, started in 1955, has now reached some 300 completed units and will ultimately contain about 560 homes ranging from $30,000 to $45,000 in contrast to the Tarrytown homes of $11,000 to $12,000.

The first increment of buried service was placed in late fall of 1955, with a second and third increment placed in 1956, which provided sufficient distribution cable to care for development through 1957. It is anticipated this development will require an additional two or three years to complete and consequently the over-all results of this trial will not be available for some time.

Experience to date, however, has been of great help in the continued development of materials, tools and methods. Costwise the three increments of buried plant installed thus far are reasonably favorable. Since no part of the subdivision was constructed with aerial plant the excess costs as indicated can only be estimated:

Actual Cost—Buried Plant (Springdale) Units

	Cost per Lineal Ft. of Line	Cost Per Lot
Buried cable and terminals (161 lots)	$ .735	$53.17
Buried service wire (55 lots) (Note 1)		$43.50
Actual Cost Per Lot		$96.67

Estimated Cost—Aerial Plant for 50 Lots

	Cost per Lineal Ft. of Line	Cost Per Lot
Pole line and anchors	$ .33	$20.52
Aerial cable and terminals	.87	52.00
Service drop wires (Note 2)		15.00
Total Estimated		$87.52
Estimated Excess Cost of Buried Distribution		$ 9.15

Note (1): Two pair service to each unit. First installations were two one-pair B underground wires. Later installations made use of the new two-pair B service wire facility.

Note (2): Based on average book costs for drop wire placed individually on a service order basis.

A third trial installation which ran concurrently with the other two was made in Chicago in a subdivision of 160 lots. Six different methods of construction using various types of above ground terminals and underground splice cases were involved. Unfortunately, due to the builders' delays, it was necessary to perform much of the work during the winter months with as much as 14 inches of frost in the ground. This, coupled with inexperience with handling the materials, tools and methods resulted in costs considerably higher

(Please turn to page 30)

Newest type of power transformer vault and telephone pedestal terminal.

I HAD THE BOSS UP A POLE...

"He knew all about the operating advantages of polyethylene coated wire . . . but I took him up and showed him why I liked it and why it's saving the company even more money than he figured."

In the past 12 years polyethylene covered line wire and cable have chalked up outstanding service records for utilities. But some of the best reasons for using polyethylene coatings don't turn up in operating statistics —they come from the men whose job it is to install and maintain the lines . . . Reasons such as these:

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- Power cable dielectric
- Tree wire covering
- GTO (Neon Sign) Cable
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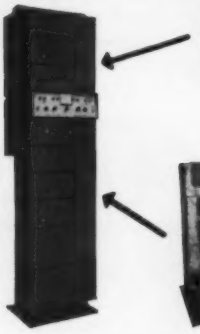
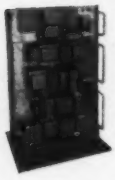
Telephone service that laughs at any weather!

NEW PHILCO CLR-9 MICROWAVE STATION

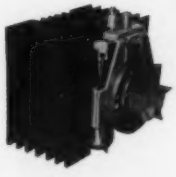


The CLR-9 terminal consists of wave-guide assemblies, master control, tubeless power supplies and plug-in chassis for IF assembly, baseband drop, modulator, reflector control and servo.

Rugged printed wiring panels increase circuit stability and simplify maintenance.



Heavy-duty, tubeless power supplies increase reliability by employing semiconductor rectifiers —assures maximum reliability and minimum maintenance.



Heat sinks cool the Klystrons by convection—gear drive assembly permits precise Klystron tuning.

Philco CLR-9 Microwave delivers 240 voice channel capacity on a single wide band path!

New Philco CLR-9 Microwave "building block" systems provide for easy expansion of toll circuits on major and subsidiary routes. Here is system economy of installation, operation and maintenance far surpassing other methods of transmission. CLR-9 microwave is engineered for absolutely reliable, unattended station operation . . . not susceptible to extremes of weather.

Plus Philco's Turnkey Services—
which include . . . *site surveys* by competent survey engineers experienced in field techniques; *system planning* by Philco's systems engineers who design your complete communications system; *installation* of your microwave system by Philco field engineers—including erection of towers and shelters; and, Philco field engineers are available for *field service*—periodic inspection and preventive maintenance—to maintain the highest standards of system performance.

Philco's new CLR-9 microwave equipment provides high channel density, duplex communications with integrated standby facilities for maximum system reliability. It is designed for quick installation in standard relay racks . . . and engineered with built-in metering and test facilities plus plug-in chassis for easy field maintenance.

Performance reliability is sharply increased in the new CLR-9 by the use of tubeless power supplies—new semiconductor rectifiers replace tubes. The use of printed wiring panels increases circuit stability—and complete plug-in chassis may be quickly removed by maintenance personnel (permits efficient, centralized depot maintenance). Klystrons in the new CLR-9 are cooled by convection . . . the use of compact heat sinks eliminates the need for bulky blowers.

To meet the challenge of advancing technology, we must support the rapid expansion of scientific education . . . at Philco, opportunities are unlimited in electronics and mechanical research and engineering.

PHILCO

GOVERNMENT & INDUSTRIAL DIVISION

4702 Wissahickon Ave., Philadelphia 44, Pa.

In Canada: Philco Corporation of Canada Limited, Don Mills, Ontario

than might reasonably be expected to be average for Chicago conditions. Despite the difficult problems encountered in this trial the results were encouraging and a second trial is well under way in the big city.

Character Of Development

Urban developments within recent years have usually fallen within two general classifications:

(1) Subdivider-builder who uses mass production methods and fully develops each block progressively until the subdivision is complete. This type of a subdivision presents the best opportunity for placing a buried distribution system at minimum cost since it permits all service wires to be installed with the initial installation.

(2) Subdivider-promotor, who sells lots to individuals or to individual builders. The prospective home owner or builder purchases the lots selectively and as a result building progresses on a rather scattered basis leaving intervening vacant lots. The initial buried distribution cable plant may, therefore, of necessity cover much of the subdivision, but will require subsequent returns for placing the buried service wires.

Time Interval

The mass production technique of modern builders might seem to present complications in the time interval that may be available for the installation of buried distribution plant, particularly during the colder months in northern climates. From our experience in the trial subdivisions which were in progress through winter months, it became apparent that building schedules are also slowed down to some extent by weather conditions.

With proper advance planning in both engineering and construction schedules there should be little need for much buried construction during the severe winter months. Some exceptions to this might be encountered in the second type of subdivision discussed previously where occasional buried services may be required when soil conditions are unfavorable for buried construction.

Coordination With Subdivider

Experience in the Springdale subdivision brought out a number of the problems associated with economical buried distribution plant. Of first importance is the necessity for a complete understanding with the subdivider with regard to the placement of buried distribution systems and the obligations of all parties concerned relative to locations, depths and right-of-way. The subdivider must provide an easement for utility purposes. We prefer it along all rear lot lines, or side lot lines where required, and approximately 10 feet wide in order to allow sufficient working clearance between the various underground facilities.

It must be understood that in cases where the telephone company is to provide and backfill the trenches, both in the easements and in the individual lots, the subdivider must provide an unobstructed and semi-finished grade prior to the start of the installation. Earth from basement excavations, etc., piled along the easement or in the path of the individual services can play havoc with buried plant costs. It must be cleared away and rough grade established before work is begun.

Many power companies have an established policy in connection with buried electric distribution systems whereby the subdivider or owner must provide the secondary service between the transformer and the house. The subdivider, or his electrical contractor, should be agreeable to furnishing a general layout of the buried electric service entrances for each premise, showing the point of exit from the utility easement, the path of each service and the depth that it will be buried. This early understanding and planning will avoid unnecessary telephone and power crossovers, and much hand digging when in doubt of the location and depth of each others cables and wires.

Buried Wire Article

An article telling of the experiences of various Bell and Independent telephone companies in placing rural telephone plant underground will be published in a near-future issue of TELEPHONY.

Coordination—Electric Company

In most instances the installation of the power company's buried distribution system will be completed, prior to the installation of the buried telephone plant. Here again coordination is an important factor in the initial installations, as well as in subsequent maintenance and fault locating work.

Under our method worked out with the Commonwealth Edison Co., each company is located on opposite sides of the easement with their main distributing cables. For this reason crossovers in the easement with the service entrance wires cannot be avoided. It is, therefore, essential that well-defined depths for each company's facilities be established in order to provide safe working space and comply with National Safety Code clearances. Two general conditions will be encountered that will determine the desired depth of each company's facilities within the easement:

(1) When electric distribution plant is installed complete with the associated service entrances, all electric plant within the easement should be at a depth of 42 inches. The telephone cable can be placed on its side of the easement at a depth of 30 inches and cross all electric service entrances with the required clearance of 12 inches. The telephone service wires to the opposite side of the easement will cross the electric primaries at a depth of 20 to 24 inches which will provide a clearance of 18 to 22 inches from the primaries.

(2) Where the electric service connections cannot be placed prior to the telephone installations, the telephone cable should also be placed to a depth of 42 inches to permit the subsequent electric services to cross above with the required clearances and at depths of 24 to 30 inches.

It is essential that the subdivider provide the semi-finished grade for both the electric and telephone systems in order that the required clearances and separations be uniform and dependable.

General Design

Buried distribution plant can be reasonably competitive with aerial plant only when obstructions such as trees, shrubs, fences, etc., can be avoided. Consequently it will not likely be practicable, costwise, as a reconstruction facility for distribution purposes in well-established, built-up areas. Complete buried distribution plant will, therefore, be largely confined to new subdivision developments or complete rehabilitation projects where trenching equipment can be operated and the cable and service wires placed with the least amount of hand digging and with a minimum of surface restoration.

Our experience has convinced us that in urban areas it is generally desirable and practicable to install buried plant about 2 feet from the property lines. This will allow fences to be built without any interference. There may be occasional situations where the plant must be put in the parkways or in front of the houses.

Since buried plant is expected to be a long-term facility and future relief or replacement is a very costly operation, adequate pairs must be provided for present and future services. The service wires to each premise should consist of at least a two-pair facility. The design should make use of as much above ground joining of conductors on binding posts in terminals as possible to avoid digging for future rearrangements.

While special splice cases are avail-

(Please turn to page 58)

NEW

COPPERPLY® WIRE

FOR TELEPHONE LINES . . . *bare or insulated*

FOR RURAL DISTRIBUTION LINES . . . *guy strand or messenger*

Copperply wire introduces a unique combination of advantages and economies. For example: better balancing of circuits, suitability for future carrier circuits without additional line work, extended service life, improved long span installation, and sizeable economies both in insulating the wire and in line construction.

These gains stem largely from precise concentricity, linear uniformity, and a non-porous rust proof copper coating permanently united with a high tensile, precision-drawn steel core, as well as availability in continuous *non-welded* lengths up to 1,000 pounds.

Copperply is now available in High Strength and Extra High Strength grades, with either 30% or 40% conductivity, and in all standard sizes from No. 3 to No. 14 AWG.

Bulletin 202 gives additional data. Write National-Standard, Niles, Michigan.

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DIVISIONS: NATIONAL-STANDARD, Niles, Mich.; *fine wire, stainless, music spring and plated wires* • WORCESTER WIRE WORKS, Worcester, Mass.; *music spring, stainless and plated wires, high and low carbon specialties*
WAGNER LITHO MACHINERY, Secaucus, N. J.; *metal decorating equipment* • ATHENIA STEEL, Clifton, N. J.; *flat, high carbon spring steels* • REYNOLDS WIRE, Dixon, Ill.; *industrial wire cloth*

THE Plant Man's Notebook

BY RAY BLAIN, TECHNICAL EDITORIAL DIRECTOR

WE HAVE just learned that multiple concrete conduit is now being manufactured and is being extensively used by some of the Bell companies. One Bell company has placed over 2 million duct feet of 6 and 9-duct multiple concrete conduit into their underground conduit system.

Multiple concrete conduit has about the same outside dimensions as multiple tile conduit, but has a 3½ inch diameter round duct. It is made in sections 36 inches long, each section having a bell end and a plain end to permit joining in sewer tile fashion. The joint is sealed with a bituminous compound applied with a pressure gun. A 6-duct section weighs 180 pounds and a 9-duct section weighs 270 pounds.

Laboratory tests indicate that the water absorption is about 5 per cent of dry weight, that the pH factor is 11.5 and that the conduit will withstand loads ranging from 10,000 to 42,000 pounds per linear foot. The concrete mix employed in the manufacturing process is 1:2:3 (1 part cement, 2 sand and 3 gravel).

Mitered sections of concrete conduit are also being manufactured. These sections are one foot long and have a five-degree offset. Special connectors are available for joining concrete conduit directly to tile conduit.

Because of the fact that a factory can be placed near the principal demand, the supply of conduit can be maintained in the manufacturer's yard and delivered trench side as needed. This limited handling reduces breakage to less than one per cent. The simplicity of the laying—joining process has enabled a five-man crew to lay upwards of 1,600 trench feet in one day. The tensions required to pull cable into concrete conduit appear to be comparable with the tensions recorded in pulling similar sized cables into other types of conduit. Sheath scratches are also reported as being quite similar.

•

The first annual meeting of the Bell System's Telephone Pioneers of America was held in Boston in 1911. Theodore N. Vail was elected president and the constitution and by-laws were adopted. The first address of the Telephone Pioneers was delivered by Alexander Graham Bell at the opening of the first afternoon's session. This is what he said:

"I feel a little presumptious on my part to try to speak of the telephone to telephone men. You have all gone far beyond me! Why, the little telephone system that I look back upon—what is it compared to the mighty system that goes through the whole extent of the country today? It is to you that this great development is due, and I feel that it behooves me to speak very modestly of the beginning that led to this great end. I cannot tell you anything about the telephone, I cannot speak of undulating current, intermittent current and pulsatory current. I belong to the past; you belong to the present."

Perhaps many who listened to Alexander Graham Bell on that day were of the opinion that telephone communication had about reached its ultimate development. Actually, we are all familiar with the fact that the progress since 1911 has been even greater than it was prior to that time. And few will argue with the fact that its development is certain to be greater in the future than it has been from 1911 to the present.

•

The miniaturization of modern communication equipment materially reduces the building space required for its installation. This equipment is, in general, built around transistors, printed wiring, miniature components and small batteries.

Perhaps some day equipment presently in use will be removed because of obsolescence and three new exchanges will be installed in the space now occupied by one of the old.

We were informed the other day by an equipment design engineer that "if you can see it, it is too large."

•

It would be a wonderful thing if we had a universal telephone number to call police and to report a fire in all towns and cities in the country.

This aim is far from realization as numbers differ in practically every town, and in some towns, many different numbers are used. We wonder how a caller in an emergency would know which number to dial.

In a recent Denver, Colo. directory, a total of 24 different numbers are listed for fire and 12 for police and county sheriffs. This, we assume, covers the greater Denver area. The Kansas City directory lists about 24 fire numbers and nearly as many for the police. The Colorado Springs directory lists 21 different fire reporting numbers and 10 different numbers for the police. It would be most difficult for a stranger who might not know exactly where he was located to place a call in an emergency.

The greater Chicago telephone directory lists FI 7-1313 to report a fire and PO 5-1313 to call the police. In our opinion, this is a much better plan than to have a separate telephone number for these essential services in each subdivision or municipality.

•

There is probably nothing quite as permanent as the temporary government office buildings in Washington, D. C. Temporary buildings, constructed during World War I, over 40-years ago, are still in use.

Introducing The NEW Teletype Model 28 ASR

Newest of a New Line. The new Model 28 Automatic Send-Receive Set is designed to serve as a center for message transmission and data processing systems.

Single, Compact Console. This new composite set incorporates basic components and accessory features into a single, compact console for a wide variety of IDP and communication applications. Included are facilities for:

1. Sending and receiving page copy.
2. Punched tape as a by-product, in conjunction with page copy, on both transmission and reception.
3. Transmitting from tape.
4. Preparing tape off-line.
5. Transmitter-distributor parallel-wire output to and from business machines.
6. "Robot Brain" Stunt Box for controlling remote apparatus, selective calling and IDP.
7. Option of printing on punched tape.
8. Producing new tapes from fixed and variable input.

Speed, dependability, low maintenance. The ASR incorporates all the advanced design features of the Model 28 Line. Printing, tape punching and tape reading at 100 wpm; off-line tape preparation at higher speeds. Smooth, continuous operation with exceedingly low maintenance—lightweight mechanisms, type box printing, all metal clutches.

For descriptive booklet, write to Teletype Corporation, Dept. 60-E, 4100 Fullerton Avenue, Chicago 39, Illinois.

TELETYPE®
CORPORATION
SUBSIDIARY OF *Western Electric Company* INC.

TELEPHONY'S Traffic Engineering Handbook

By Gilbert R. Brackett **May 24, 1958**

Section 14 (continued)

The Traffic Unit

The Emergency Load

During an emergency, an operator may exceed a prescribed busy hour traffic peak load by 20 per cent. But this load should not be carried for more than one hour in each half of an operator's tour of duty. The basic coefficients contemplate loads sufficiently within the ability of the operator of average skill, and that she will be able to carry such loads that normally occur on high traffic days. This means, the loads expressed by the coefficients represent:

(1) Loads under an average daily traffic.

(2) An hourly load that the operator of average skill can carry throughout a day without becoming unduly fatigued and still under an acceptable grade of service.

The important thing to remember is, that in using loads for equating purposes, their relative values and the number of calls which should be handled by an average operator under average conditions, are important.

Formula for Switchboard Coefficient

15.65 seconds = Length of basic unit call or one unit.
3,600 seconds = Number of seconds in one hour.
230 calls = Number of possible unit calls or units in one hour (3,600 seconds ÷ 15.65 seconds).
2,700 seconds = Number of work seconds in one hour.
2,700 seconds ÷ 3,600 seconds = 75 per cent = percentage of allowable time represented by ("X") actual time.
× = Average actual time handling calls.
× ÷ 75 × 100 = Y = allowable average time for call handling.
Y ÷ 15.65 = Coefficient for calls being handled under the study.

For busy hour figures, use 80 per cent to 85 per cent allowable operating time.

To obtain "X" (actual average time for handling calls associated with coefficients) the following formula may be used: Coefficient X 15.65 = Y allowable time for call handling. Y ÷ 100 × 75 = average actual time handling calls.

Section 15

Force Adjustment

One of the major functions of traffic management is the provision of an adequate operating force. Upon this hinges the grade of service given, the maintenance of good employe relations, and the control of the greater portion of the traffic department's expense.

From this we can see why all traffic management people should have the right conception of the relationship between force adjustment and other traffic operations, such as: Employment and working conditions; selection and training of forces; provision and arrangement of facilities; the supervision and handling of traffic, and the analysis of results and then the taking of the corrective action necessary.

Estimating traffic volume and planning future force needs should be done far enough in advance so that an even intake of new people will result.

The management must determine the correct hourly distribution of operators, supervisory, and auxiliary forces that will be needed to meet present and future conditions as shown by the projection of load levels and anticipated changes in operating conditions.

The management must shrewdly recognize that there will be preferences by the employee group or even by individuals for certain hours, tricks, or days of work. He must plan the arrangement of forces to meet the variations in traffic and he must carefully assign employes to positions and days of work. Later, a review of load and service results will show how good a job was done in adjusting the forces to traffic volume and service objectives.

There are many factors in each office which must be considered when assigning people to jobs but one of the most important is good judgement. It is a prerequisite in insuring good service to the customer, satisfactory load results, and happy employe relations.

It is very important, especially in smaller offices, that procedures be followed which will definitely aid in the provision and placement of forces.

The local traffic manager is responsible for service results and it is his knowledge of the conditions in the central office he supervises which will bring about the best job of force adjustment and which will result in good service. This will happen only if he is to supervise all force adjustment programs.

Of course, unusual conditions may promote a centralized bureau for a group of exchanges, but even when this is done, the local manager should be thoroughly informed on procedures if he is to fully cooperate in force plans and activities.

The assignment of operators to tricks, positions, and days of work is a central office function because such work calls for an intimate knowledge of the experience and preferences of the individual operators and of all equipment arrangement factors.

The chief operator is the best informed person on such matters and the operators are more likely to be placed to the best advantage from both the employe and service viewpoint if the selection of hours and the assignment of positions are handled personally by the chief operator and her staff.

(Section 15 will be continued next week)

This guy is growing fast!

Born just last year, the new Copperweld* Type M Guy Strand has become the fastest growing guy in the field. Men in the telephone, power, and railroad industries have helped it grow. They have welcomed Type M to their immediate family of products, and with it has come real economy. It sells at new low prices, thanks to Copperweld research and new production techniques. And it saves in yearly maintenance since Copperweld requires no upkeep—a fact long established.

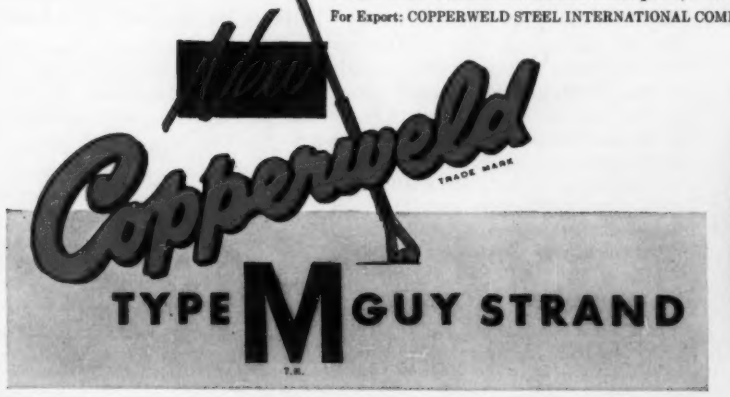
Convenience is another quality of Type M. Pliable and easy to handle—it can be readily bent, served, moused or clamped. Write us today for complete information regarding the advantages of Type M and add it to your family of products now.

*trademark

COPPERWELD STEEL COMPANY

WIRE AND CABLE DIVISION *Glassport, Pa.*

For Export: COPPERWELD STEEL INTERNATIONAL COMPANY, New York



LEFT PHOTO: Shown about to start off on their rounds are the sales people of General Telephone Co. who have been calling on the residents of Washington, Ia. Left to right are General Telephone Co. of Iowa employes, Robert Barnes, general commercial supervisor, Grinnell; Clinton Walters, district manager, Sidney; Charles Macavoy, district manager, Washington; Shirley Escher, cashier, Washington; Michael Barnes, commercial representative, Grinnell; Dixie Robinson, general purchasing department, Grinnell; Jeanette Starnes, general treasury department, Grinnell. Also shown is D. E. Lamaster, assistant to vice president, merchandising, General Telephone Corp., New York City, and Don Schumacher, director of public relations and merchandising for General Telephone Co. of Iowa. RIGHT PHOTO: Don Schumacher is shown conducting the first day's drawing for a free long distance telephone call. Hoping that they hold a lucky number are some Washington, Ia., residents.

Report No. 2

On General's "Telephone Fair"

MUCH ATTENTION has been focused on General Telephone System's "Telephone Fair" designed to make the residents of Washington, Ia., aware of the latest in telephone equipment and services (TELEPHONY, May 17, p. 26).

This interest in the merchandising experiment has been displayed not only by telephone people, but by those engaged in all kinds of merchandising and marketing activities for many other industries.

Don L. Schumacher, director of public relations and merchandising for the General Telephone Co. of Iowa, sends Report No. 2, chronicling the first five days of the "Telephone Fair" for TELEPHONY's readers.

Mr. Schumacher reports that there has been a keen interest in the display trailer with more than 2,000 people visiting it.

Many actual sales have been made right at the trailer. In fact, credit for all large items sold, such as electronic secretaries, key telephones, dialaphones, etc., can be traced to subscribers who had visited the trailer, had seen a demonstration of the equipment, and who then gave their order.

However, Mr. Schumacher says, no large sales have been made at the trailer without a previous visit to the subscriber by one of the company's sales personnel.

An interesting commentary he made was that the display equipment in the trailer has received the attention of the very young and old. Groups of school children have been brought by their teachers to the trailer. Such items as telephone fair balloons, ballpoint pens and shopping bags have been well received by the various age groups where such items are applicable.

Sales people have been well received in both businesses and homes, according to Mr. Schumacher. He says that people are aware that the company is interested in their telephone facilities, problems, and equipment and that people realize that the sales personnel are making recommendations and displaying equipment that will make the subscribers' homes and businesses more convenient and appealing places to live or work through better telephone service.

Actual sales, according to this report, have been at the rate of one sale for each three premises visited counting only those who have been at home, and an average of one sale out of five visitations if calls on those not at home were included. Where an actual stop has been made, actual revenue has been averaging better than $2.50 per sale, or $30.00 yearly additional revenues per sale.

Completions per day have averaged about 8.7 completions per sales person. Thirty-two per cent of the actual calls completed have been sales.

Mr. Schumacher says that the following types of equipment and lines have been sold: Regrades, primary business and residence service, additional listings, electronic secretaries, dialaphones, hands free telephones, color telephone extensions, changes from black to color telephones, key systems, and extensions.

Directory salesmen selling classified advertising have been offering credit cards to businessmen desiring them. These cards have been well received. Also certain companies have requested additional cards for some of their employes.

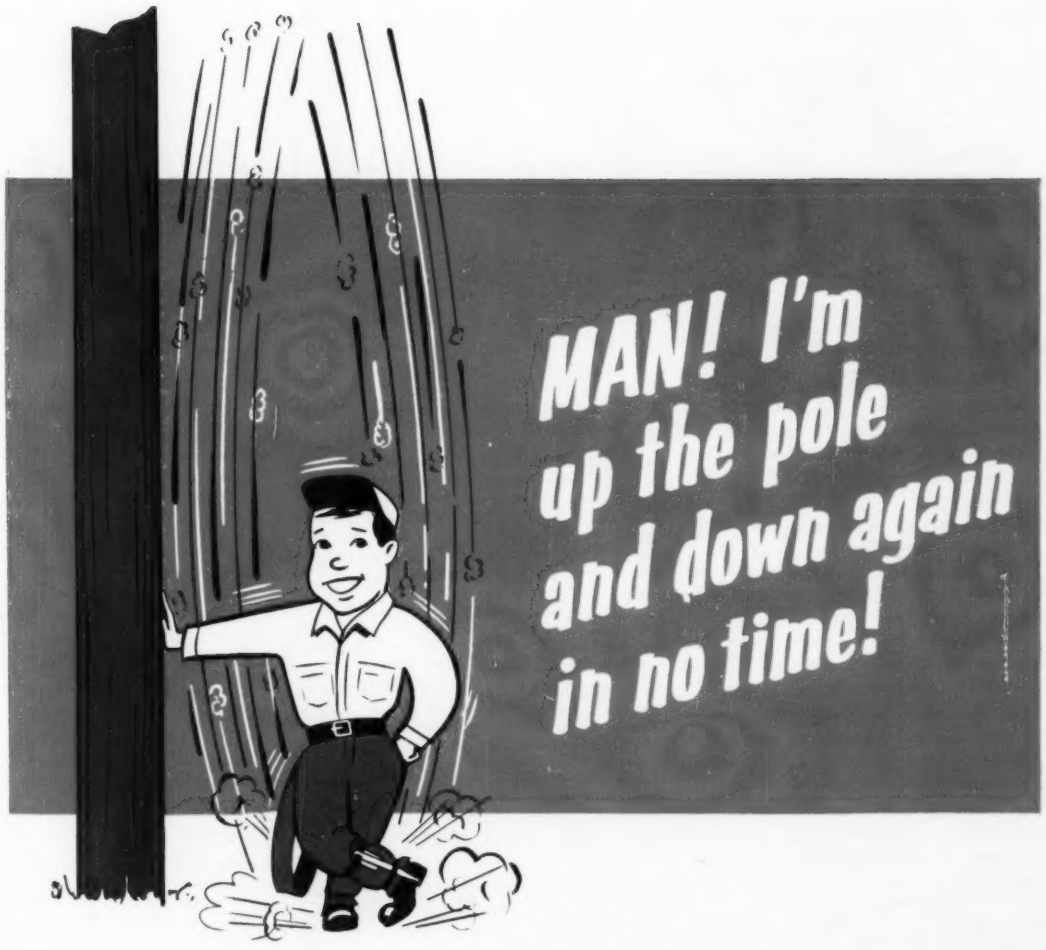
Describing the weather for the "Telephone Fair's" first five days, Mr. Schumacher says it has been clear and cool. The first Saturday for the fair turned out to be rainy and this, he says, may have contributed to slower sales that day.

Next week TELEPHONY will bring you Report No. 3 on the Fair.

Excise Tax Commentary Booklet Issued By USITA

A booklet containing reprints of editorials and other newspaper comments on repeal of the excise tax on telephone service has been published by USITA and a copy sent to member companies.

R. A. Lumpkin, chairman of the USITA Tax Committee, urges telephone companies to continue to call on influential persons in their communities, particularly those who use a great deal of long distance service. He also asks that companies contact their senators and representatives as well, to bring the need for repeal to their attention.



Splicing is a cinch with SUPERIOR TEL-U CABLE!

It's simple to identify pairs for either straight or branch splicing.

SUPERIOR TEL-U Cable is fully color-coded to the ultimate standard of the industry . . . takes the cable splicer far less time!

Construction-wise, you can't buy a better telephone cable than SUPERIOR TEL-U!

SUPERIOR TEL-U CABLE

is manufactured strictly in accordance with REA Spec. PE-22, 5/1/58.

For details, write

SUPERIOR CABLE

SUPERIOR CABLE CORPORATION, Hickory, North Carolina

Courts and Commissions

OK Florida Interim Raise To Protect Earnings

The Florida Railroad & Public Utilities Commission on May 9 granted an interim rate increase, under a bond of $50,000, to the Southeastern Telephone Co., Tallahassee.

The Southeastern company had filed the rate increase application on Mar. 7. The commission on Apr. 7 directed the company to prepare and submit a detailed study and separation of its telephone operations between intrastate exchange and toll on the one hand, and interstate toll on the other hand.

Southeastern subsequently filed a motion with the commission to allow the company to place in effect a temporary schedule of increased rates.

In granting this interim rate increase, the commission said that the necessary separations study would require about six months and that this lapse of time would seriously "jeopardize its (the company's) financial position and seriously contribute to a deterioration of its credit and its ability to render a satisfactory service to the public."

Continuing, the commission said that the company's motion and affidavit show that its current earnings are at a rate less than 4 per cent of its investment with some indication of a downward trend continuing. The company's construction budgets for 1958 and 1959 are more than 6 million dollars and 5 million dollars of this amount must come from the sale of securities. Southeastern also asserted, according to the commission, that its present earnings will not support such a financial undertaking and that the public service will suffer if the company cannot attract needed capital.

The commission then went on to state:

"It is obvious to the commission that some increase will probably be necessary but the extent of the same, of course, cannot be determined until a full public hearing has been held by the commission on the application."

Continuing with its order, the commission pointed out that in the regulation of public utilities it serves a two-fold purpose:

"First the commission must protect the interest of the public who are subscribers . . . and see that such subscribers are furnished adequate service at the lowest possible cost which will give the company a fair rate of return on its property which is used and useful in rendering such a service; and second, the commission must allow the company an opportunity to earn, through reasonable rates, a return on its investment sufficient to enable it to attract such additional capital as may be needed for the expansion and improvement of its public service.

"It is axiomatic, of course, that the public itself must suffer in the long run if its utilities are unable to secure necessary funds for expansion and improvement. Therefore, the public interest itself requires that public utilities must be kept in a sound financial condition, otherwise the public's demand for more and better service cannot be met."

Since it will take several months for a record to be made upon which the commission can base a final order, the commission said it felt that the company should be allowed to put the proposed schedule of rates and charges into effect immediately under bond.

The commission went on to say that if the credit of the company was being impaired by unreasonably low earnings, the interim increase under bond will protect the company. The delay between entry separation study and final order then will not operate to the hindrance of the company.

The commission said it was its view that "the burden of preserving the financial stability of the applicant during the period necessary for adjusting its rates and charges should, in this manner, be borne by both the public and the utility inasmuch as they are both vitally interested in the continued expansion and improvement of telephone service and facilities in the affected area."

OK Rate Boost in Neb.

The Nebraska Railway Commission on May 12 authorized the Stanton Independent Telephone Co. to increase certain service rates and charges effective June 1.

Grant Part of Increase Asked By Wis. Company

The Wisconsin Public Service Commission on May 1 granted a rate increase to the Weyauwega Telephone Co. (TELEPHONY, Nov. 30, p. 56). The increase will bring the company's rate of return on plant investment to 6.5 per cent, instead of the 7.38 per cent requested by the company.

Under the increased rates, net operating revenues will amount to $16,003 annually rather than the $18,177 filed for by the company.

In its order the commission noted that all the voting stock of the company is owned by the George H. Dobbins family. In cutting back the revenue increase request, the commission commented:

"A family controlled utility where the amount of officers' wages can be determined by one or at most a few stockholders, and where common stock is not offered to the general public, cannot be compared with corporations whose stock is held publicly in a cost of capital study to determine what return on common stock equity should prevail."

Ill. Company Rate Increase Appealed In Circuit Court

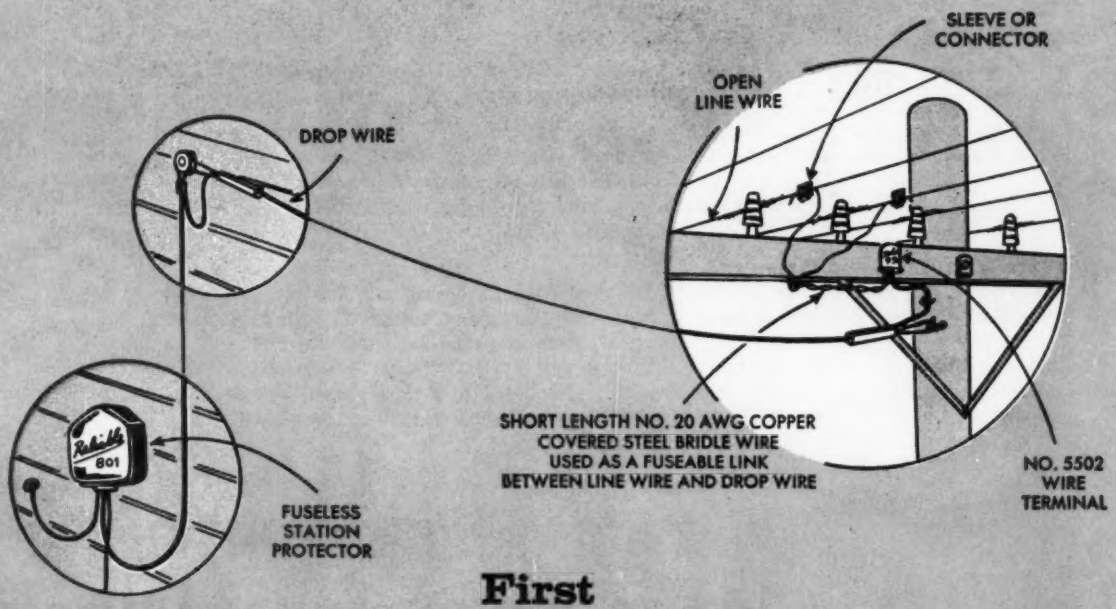
The rate increase granted the Northwestern Telephone Co., Freeport, effective Apr. 1 (TELEPHONY, Mar. 8, p. 41), is being appealed in Illinois Circuit Court by 16 area towns and two county boards.

Harold R. Nettles and James W. Richardson, attorneys, filed the notice of appeal in Springfield on May 1 and on May 4 filed a copy of the notice of appeal and acknowledgement by the Illinois Commerce Commission in circuit court.

The commission now becomes the defendant in the court case, represented by Latham Castle, attorney general.

Mo. Exchange Seeks Sale OK

A hearing is scheduled on May 8 before the Missouri Public Service Commission on an application of O. K. Furr to sell and R. F. Neathery and Paul E. Thompson to purchase the telephone exchange at Koshkonong.


SLEEVE OR CONNECTOR
OPEN LINE WIRE
DROP WIRE
SHORT LENGTH NO. 20 AWG COPPER COVERED STEEL BRIDLE WIRE USED AS A FUSEABLE LINK BETWEEN LINE WIRE AND DROP WIRE
NO. 5502 WIRE TERMINAL
FUSELESS STATION PROTECTOR

ADVANTAGES

- People and Property are Safer—Abnormal Currents are Grounded
- No Fuse Troubles
- Air Gap Sealed Against Dirt and Moisture
- Low Maintenance Cost
- Insect and Weather Proof
- Small, Neat, Easy to Install

First Fuseless Protectors UL Approved for use with OPEN WIRE

Reliable Fuseless Station Protectors are now approved by Underwriters' Laboratories for use on circuits connected to open wire (see National Electric Code, article 800, current edition). This is in addition to the four year old approval for use with circuits from cables having metallic sheaths or shields.

All Reliable Fuseless Station Protectors employ self-contained No. 504 Protector Units with low cost replaceable elements.

Write for literature on Reliable Fuseless Station Protectors

No. 700

No. 801

No. 800

Reliable ELECTRIC COMPANY • FRANKLIN PARK, ILL.

A HALF CENTURY OF SERVICE TO THE UTILITIES

RELIEVE YOUR GROWING PAINS

with General Cable Distribution Wire!

LOW-COST DISTRIBUTION WIRE

HELPS YOU EXPAND YOUR LINES

QUICKLY, EASILY AND ECONOMICALLY!

If your company is operating in a rapidly expanding community, distribution wire provides a quick, economical way to extend open wire lines or cable plant.

Here are some of the money-saving advantages of this wire. On new construction, it can be attached directly to the pole. For increasing existing pole line capacity, it can be attached to the underside of a crossarm or directly to the pole. Staggered pair lays minimize crosstalk. Long cabling lays permit easy attachment of support wire to pole.

The steel support wire has a breaking strength of 1800 lbs. and both the support wire and copper conductors are polyethylene insulated. Each of the conductors is again protected by a jacket of fully color-coded polyvinyl chloride. This provides all-weather protection and quick identification. We stock various sizes of distribution wire plus the associated hardware in all our warehouses—to help you get your job done *fast!* For complete information, call your Automatic representative or your nearest A. E. Sales Corporation warehouse.

DISTRIBUTION WIRE

	URBAN	SUBURBAN	RURAL
Pair	16	6, 11, 16	1, 2, 3, 4, 5, 6, 11, 16
Size	24 AWG	22 AWG	19 AWG

Automatic's 5 friendly warehouses:

George Ferguson, Mgr.
Northlake,
Illinois
Fillmore 5-7111

"Michie" Hester, Mgr.
2915 Moore St.
Richmond 21, Va.
ELgin 8-9280

Ed. J. Chok, Mgr.
2360 N. W. Quimby St.
Portland 10, Ore.
CApital 3-7244

Fran Batcher, Mgr.
158 Corliss Avenue
Johnson City, N. Y.
Binghamton 7-8507

Robert Miller, Mgr.
2021 Main St.
Kansas City 8, Mo.
HArrison 1-4720

AUTOMATIC ELECTRIC

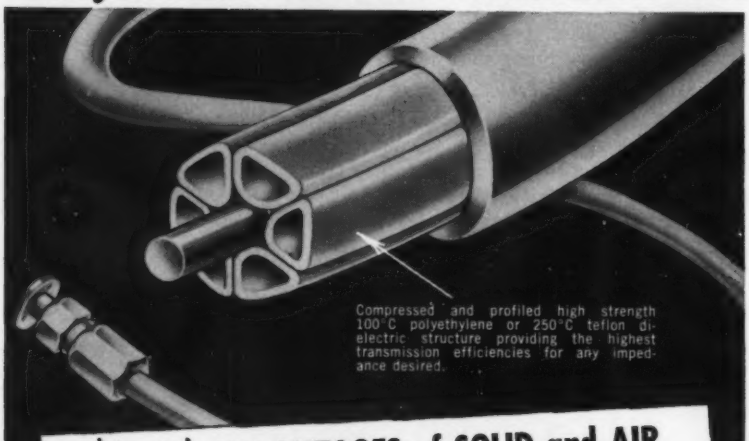
A member of the General Telephone System—One of America's great communications systems

GENERAL SYSTEM

NEW All-American!

Spir-O-line®

SEMI-FLEXIBLE ALUMINUM TRANSMISSION LINE


Compressed and profiled high strength 100°C polyethylene or 250°C teflon dielectric structure providing the highest transmission efficiencies for any impedance desired.

UNIQUE! ADVANTAGES of SOLID and AIR DIELECTRIC LINE COMBINED by Prodelin in revolutionary All-Aluminum Cable and Connector

*Spir-O-line** — Prodelin's latest contribution to air-dielectric transmission — combines the low loss of air dielectric with the high power of solid dielectric lines by using dielectric tubes compressed and profiled into a symmetrical supporting structure. *Spir-O-line* is available in continuous lengths up to 1000' with reliably low VSWR and 50, 70, 75 ohm, and other impedances; the 50 ohm line usable up to these cut-off frequencies: ⅜" - 15.0 Kmc; ½" - 10.0 Kmc; ⅞" - 5.0 Kmc; 1⅝" - 2.8 Kmc; 3⅛" - 1.5 Kmc. The normally non-corroding aluminum-alloy outer conductor is available with a non-contaminating polyethylene jacket for caustic environments.

FEATURES

- No special techniques or tools required to make up cable-connector assembly
- No metallic welds or dielectric splices are used regardless of cable length
- Continuous high-conductivity aluminum sheath assures maximum pressure tightness and weather protection
- Uniform straight lay tubular support throughout keeps inner conductor smoothly centered on beads
- Pressure-tight and high tensile cable-connector assembly can be made with only hand-tightening
- Dielectric structure makes continuous and intimate line contact with both conductors without spiraling — yielding best broadband performance, highest power handling capacity, lowest attenuations, and VSWR smoothness
- Both cable and connector available for −90°C to +250°C operation
- Terminates in standard EIA (RETMA) dimensions

PLUS

Spir-O-line Connector

Amazing Prodelin development! Adequately pressure-tight for lab use when hand-tightened . . . ready for field service when wrench-tightened. Specifically designed for use with soft aluminum tubing to provide highest tensile strengths without tube distortion. No special techniques, bulky fixtures, or non-standard tools required. *May be used again and again without redressing tubing or replacing connector parts!* Saves time and money! RETMA dimensioned.

Specify Spir-O-line HI-TEMP with Teflon for 250°C operation

ANTENNAS and TRANSMISSION LINES
Prodelin Inc
KEARNY, NEW JERSEY, U.S.A.

Reconsider your cable requirements now and ask how Spir-O-line can provide new life with added economies in your service! WRITE FOR TECHNICAL BULLETIN TODAY

DEPT. T-5, 307 BERGEN AVE., KEARNY, N. J.

*PATENTS PENDING

Spir-O-line! — the only All-American Semi-Flex Aluminum Cable and Connector Conceived, Engineered, and Manufactured in the U. S.!

OK Raise; Hold 2 Purchase Hearings in Nebraska

The Lodgepole Telephone Co. on May 2 was given authority by the Nebraska Railway Commission to raise rates for local exchange service. The matter was settled without a hearing after letters of consideration from the commission to interested parties failed to produce anyone who indicated a desire for a hearing.

Rates were established as follows, effective June 1:

	Present	*Approved*
One-party business	$6.00	$6.50
One-party residence	4.00	4.50
Two-party residence	3.50	3.75
Four-party residence	3.00	3.25
Rural	3.00	3.25

The new rates are estimated to produce additional annual revenue of $612. This will produce a rate of return of 6 per cent on a net book rate base of $38,642.19.

•

The commission on May 19 was to have heard the application of the Leigh Independent Telephone Co. for authority to sell its properties to the General Telephone Co. of Nebraska, Columbus.

On May 27 the commission is scheduled to hold a hearing on an application of the Ulysses Independent Telephone Co. to sell its properties to the Clarks Telephone Co.

Bell in Cal. Granted Partial Rate Increase

The California Public Utilities Commission on May 7 granted the Pacific Telephone & Telegraph Co. a rate increase of $27,500,000 effective on May 27.

The commission approved $15,484,000 a year in new revenues and made permanent a $12,016,000 interim increase in the Los Angeles area (TELEPHONY, Jan. 11, p. 52), put into effect last December.

This total of $27,500,000 was 32 per cent short of the $40,799,000 asked for by Pacific T&T, whose president, Mark E. Sullivan said, "We are keenly disappointed."

The revenue increase to Pacific T&T will be 4.8 per cent.

The boost will give the company a 6.75 per cent return on its $1,276,418,000 investment in California.

Two Indiana Companies Ask OK on Exchange of Stock

The General Telephone Co. of Indiana, Lafayette, and the Brookville Telephone Co. on Apr. 30 filed a joint petition with the Indiana Public Serv-

ice Commission asking that General take over the Brookville company.

General, already the principal stockholder of Brookville Telephone Co., would take over the company through an exchange of stock.

Deny Mountain States Raise By 2-to-1 Decision In Mont.

In a two-to-one decision, the Montana Public Service Commission on May 7 denied the entire rate raise requested by the Mountain States Telephone Co. (TELEPHONY, Sept. 21, p. 35). Commission Chairman Paul T. Smith and Commissioner C. J. Armstrong ruled that the company's present rates in Montana are adequate and that no higher rates should be approved.

A dissent was filed by Commissioner Austin B. Middleton, who disagreed with the majority's valuation of the company's property and other aspects of the order. He contended the proposed rates were "fair and reasonable."

The commission also denied a petition by the company to reopen the case for consideration of changes said to have taken place since the original petition was filed.

The commission's majority order found the gross "fair value" of the company's Montana property to be 40.5 million dollars. The company had asked a valuation on its reproduction cost new less depreciation figure of $52,147,000. Commissioners Smith and Armstrong made deductions from their adopted figure, disallowing plant under construction, working capital and other items on the ground that the ratepayer should not be required to pay a return on them.

Commissioner Middleton disagreed with the valuation of the majority and contended that it was contrary to past procedure and failed to give adequate weight to the reproduction theory.

After making the deductions, the commission's majority set the fair value figure of the company's property at $36,807,000.

After disallowing $82,236 in "special charges" as expense items, commissioners Smith and Armstrong found that the company's net earnings were $2,045,928 for the year. It then applied this to the rate base to determine a rate of return of 5.56 per cent.

In his dissent, commissioner Middleton declared that the rate of return was unreasonable and that the company was entitled to a return of between 6 and 7 per cent.

Asks Rate Authority in Wis.

The Wisconsin Public Service Commission on Apr. 24 was to hear the

WHITNEY BLAKE
TELECORD®
SETS
IN COLOR
In colors to match all telephones and trimmed to fit all makes, Whitney Blake's famous TELECORD Sets are now available in hand set and line cords in lengths up to 25 feet.
TELECORD, noted for the toughness of its jacket under adverse conditions, is the logical replacement cord.
TELECORD, never frays and is highly resistant to abrasion, perspiration, humidity, oil and grease.
Specify Whitney Blake Replacement Sets in black or colors when ordering from your independent telephone supply house.
INDEPENDENT
WB
10-8
WELL BUILT WIRES SINCE 1899
WHITNEY BLAKE COMPANY
NEW HAVEN 14, CONNECTICUT

application of the Nelson Telephone Cooperative for authority to apply its proposed rates to subscribers to be acquired through purchase of the Arkansaw Telephone Co.

Relocation Cost Case Goes To N. M. Supreme Court

New Mexico's Supreme Court on May 9 received an appeal of a lower court ruling which upheld the constitutionality of a 1957 state law requiring the state to reimburse public utility companies for the cost of moving their facilities when necessitated by federal-aid highway construction.

A decision is not expected for several months on the appeal, which involves a consolidation of four separate cases. They are the State Highway Commission vs. Mountain States Telephone & Telegraph Co., Southern Union Gas Co., Ruidoso Telephone Co. and a second Southern Union Gas Co. case.

State Highway Department figures indicate the lower court decision, if upheld by the state supreme court, will cost nearly 9 million dollars over the 13-year life of the federal-aid highway act. Although the federal government will pay most of the utility reimbursement cost, the State Highway Commission opposes the law on the grounds it would reduce the amount of funds available for highways.

District Judge David Carmody in Santa Fe rejected arguments that the law was unconstitutional on several counts, including the contention it violated a state constitutional section prohibiting the state from making any donation to any person or corporation.

Neb. Company Sets Rates

The Nebraska Railway Commission on Apr. 11 gave permission to The Lincoln Telephone & Telegraph Co. to establish rates and charges for key type secretarial answering equipment as follows:

	Per Month	*Installation*
Six line service....	$4.50	$3.00
Ten line service...	6.00	5.00

N. D. Company Incorporated

The Haymarsh Farmers Telephone Co. filed articles of incorporation with Ben Meier, North Dakota secretary of state, it was reported on May 1.

Ill. Company Asks Raise

The petition of the Tom A. Marshall Telephone Exchange, Keithsburg, for a rate increase was to have been heard on May 20 by the Illinois Commerce Commission.

Phyllis Herion, an Illinois Bell Telephone Co. clerk, uses the company's new "dial-in-handset" drive-up telephone to place her call.

Illinois Bell Introduces Dial-in-Handset

Twelve of Illinois Bell Telephone Co.'s new "driveup" telephones in Chicago will have still another "new look" —a "dial-in-handset," the company announced on May 6.

The dial-in-handset telephone has the dial in the bottom, or "speaking" portion of handset "handle." The dial is smaller than the regular one on the telephone base. A smaller speaker is located in the center of the dial.

The new telephone enables persons in automobiles to dial a call without stretching. The nation's first "dial-in-handset" for general public usage is located near an intersection on a Chicago boulevard. The 11 others are being installed on other main streets.

The telephones are mounted on a steel pedestal about 4½ feet from the ground, and are protected on the three closed sides by an orange plastic hood. A light at the base of the telephone affords easy viewing.

General Telephone Ads Feature Company's Growth

General Telephone Corp., in its full-color national ads, will feature many of the fast-growing areas of its operating companies, according to Donald C. Power, president. The first ad, scheduled for May in *The Saturday Evening Post, Time, Newsweek, Business Week,* and *U.S. News and World Report,* features Baytown, Tex., as one of the "Places that are r'aring to grow" and points to it as an example of the areas that helped build General Telephone into the second largest telephone system in this country.

The Baytown area, part of the General Telephone Co. of the Southwest, has grown spectacularly in the past seven years, with a population increase of 49 per cent. During the same years, the number of telephones in this area increased by 69 per cent. Baytown, according to Mr. Power, is typical of many of the areas in the 30 states in which General Telephone operates, and which have given the company an increase of 2,800,000 telephones in the past eight years, with a continuing increase of one thousand telephones every working day.

To observe Baytown's national prominence as a result of this advertising, the entire area is marking the month with special activity, scheduled for its start, the week of May 18. The mayor of Baytown has issued a special proclamation calling attention to Baytown's selection as a subject for this advertising.

A community-sponsored dinner is scheduled to honor General Telephone, and stores and local industries are backing the advertising by displaying reprints and blowups of the ad in their stores, plants, and advertising, as well as using reprints of the ads in all their mailings.

Other areas will be featured in future advertising of the company, Mr. Power said.

Tourists Alerted in London

A new telephone information service will be at the disposal of London tourists this year. Visitors will be able to pick up the telephone and learn the details of all important events being held in the capital that day. The service will be rendered in French, German, and English.

A Costly Walk

Over 34 per cent of pedestrian deaths in the U. S. in 1957 resulted from crossing in the middle of the block, a total of 2,600 persons.

RATE-MAKING

Continued from page 21

The same meal that cost 5 francs in 1914 would cost you about 2,000 francs today. What happened to the French utilities during that period? Take a look! Government ownership by default —every one of them—gas, electric, railroads, and telephone. They collapsed under the double pressure of economic inflation and weak-kneed political resistance to necessary compensatory rate increases.

Understand, I do not contend that a fair value rate base instead of original cost would solve utility problems if such a collapse of the dollar happened to us (and I pray it never does). But, at least it would be a lifesaver, holding the utility's head above the rising waters of inflation, just as the dead anchor of original cost would inevitably drag them down into the depths of insolvency.

Now, I think we would all agree that if the purchasing power of the dollar fell to *10 cents* in a single year, there probably would not be a person in the country, certainly no responsible regulatory commissioner, who would seriously urge that utility rates for the future should be fixed on 10-cent dollars. That is an extreme example. But at what point does the use of a cost base become so unrealistic as to be unfair? There must be some point. Would it be in the case of a drop of one-half purchasing power in one year? Or 25 per cent? Or 10 per cent? Our postwar drop, as already noted, has been 4 per cent a year, or 47 per cent in 16 years.

I realize, of course, that some temporary adjustment can be made by liberalizing the rate of return to compensate for the inflationary loss of base value. But, honestly, what regulatory commissioner would face up to the amount of adjustment in the return allowance that would be required to compensate for a 50 per cent loss in the rate base? It would mean a return of 12 per cent. That might sound fantastic because it has not happened yet. But, it could happen—over a fairly short period—if we have a persistent accelerating inflationary trend in this country for the next 10 years or longer.

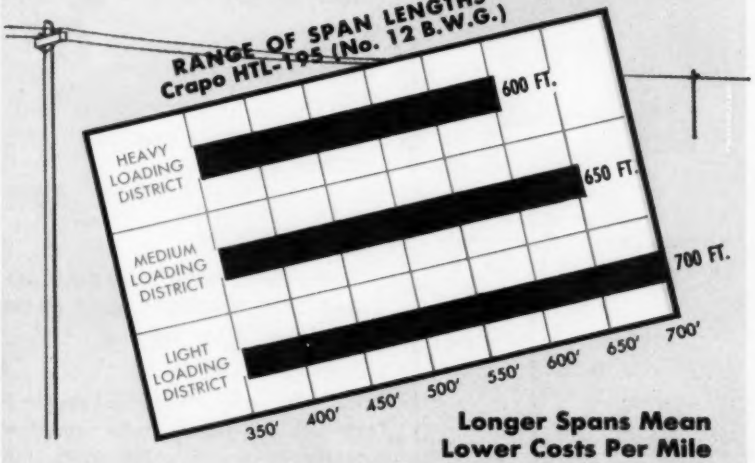
I remember one thing the late Wendell L. Willkie told me while he was still a lawyer in the utility business, and before he got into politics. It was right after the TVA had paid him, on behalf of his client utility companies in the old Commonwealth & Southern group, some 60 million dollars for their Tennessee properties. I had asked

Crapo

HTL-195

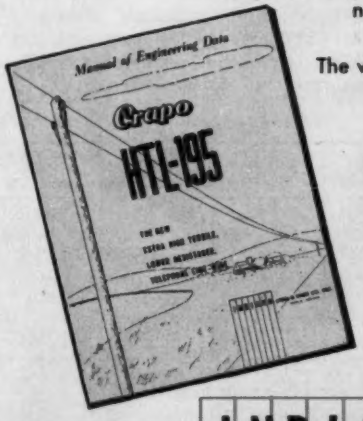
FOR EXTRA LONG SPAN RURAL LINES

The *NEW LOWER* Resistance Extra-High Tensile Line Wire



Longer Spans Mean Lower Costs Per Mile

You can cut the number of pole structures to a minimum when you use Crapo HTL-195 in building rural telephone lines. Extra long span construction, made possible by the high physical strength of this new wire, means marked savings in material and installation costs.



The voice transmission quality of Crapo HTL-195 is equal to that of Crapo HTL-135 and superior to older grades of ferrous wire.

Pertinent technical data have been prepared to assist engineers in designing and building extra long span lines with Crapo HTL-195.

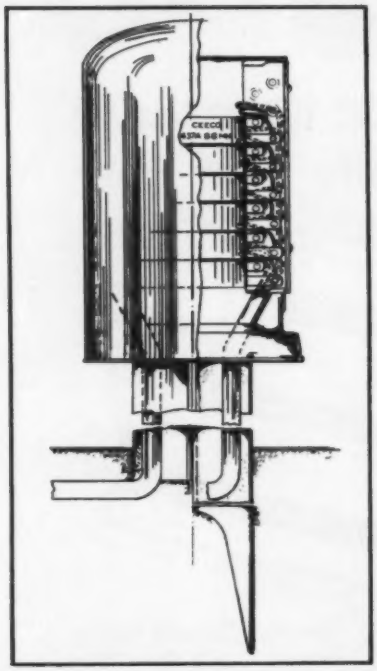
WRITE TODAY for FREE COPY of the CRAPO HTL-195 "Manual of Engineering Data" No. A-195

INDIANA STEEL & WIRE COMPANY, INC.
MUNCIE, INDIANA

CEECO **IT'S NEW!** CEECO

CEECO PARKWAY PEDESTAL TERMINALS FOR LOADING DIRECT EARTH BURIAL PLASTIC CABLES

Using Type C637A (88MH) or Type C637B (44MH) Coils



Lug-12 Terminal and Pedestal with C637A-(88MH) loading coils or C637B(44MH) loading coils

★ECONOMICAL

LOAD ONLY NEEDED PAIRS—ADD TO FULL CAPACITY AS REQUIRED

★ACCESSIBLE

ANY OR ALL PAIRS

★STRONG

ALL STEEL CONSTRUCTION PROTECTS CABLE—"BELL JAR" TYPE COVER

★PROTECTION

SIDE PLATES GIVE NOMINAL AIR GAP TYPE PROTECTION AT EACH TERMINAL STUD END

CEECO Parkway Pedestal Loading Terminals for plastic cable provide accessibility to all cable pairs, for testing, splicing, cross connecting, and buried drop wire distribution.

The type C637A(88MH) or C637B(44MH) load coils are completely encapsulated in plastic—moisture tight—high dielectric strength. These coils are same type used in CEECO type 177 terminals on rural distribution wire. These coils are interchangeable in both terminals and can be installed with standard ⅜" socket wrench. Coils are stock item.

CATALOG NUMBER	DESCRIPTION	TOTAL NUMBER PAIRS HIGH	TOTAL NUMBER COILS	INSIDE HOOD DIAMETER	APPROXIMATE HEIGHT OF HOOD
LUG-12	TERMINAL-PEDESTAL AND HOOD (NO COILS)	6	12	6 ID	11"
LUG-16	TERMINAL-PEDESTAL AND HOOD (NO COILS)	8	16	6 ID	14"
LUG-28	TERMINAL-PEDESTAL AND HOOD (NO COILS)	14	28	6 ID	21½"
LUG-52	TERMINAL-PEDESTAL AND HOOD (NO COILS)	26	52	6 ID	32¾"

Write us for assistance on your loading problems
CEECO loading coils are sold by your telephone equipment supplier

COMMUNICATION EQUIPMENT & ENGINEERING COMPANY
5646 West Race Avenue • Chicago 44, Illinois
Phone EStebrook 8-3109

Willkie whether he thought that the rise of government ownership in the electric business was due to the fact that it was such a *profitable* business, such a money-maker that the various government agencies had become covetous.

Disagreed With Idea

Willkie thought a minute and then he disagreed with that idea. He said, as near as I can recall, that the TVA purchase was a special situation. But, he added that if and when public ownership of utilities, in a general way, comes to the United States it will not come to overwhelm those utilities which are still *making* money, or at least enough money to attract private investment. Rather, he thought, that it would be a sort of public ownership by default—that it would come as a necessity, in situations where for one reason or another utility services were no longer able to attract private investment. Obviously, the government has to take over the service operating in the public interest. He pointed out that is how the utility services in foreign countries, one by one, had been socialized.

And, so, I take the position that the danger of the cost base lies, not in its use during a period of relatively stable money, but in the stubbornness of those who would insist on using it when it becomes no longer realistic or defensible on any grounds. I grant you that it is possible to rationalize the confiscation of property values in a legalistic way. Rate-making is a legislative act. And, it is possible to argue that inflation makes legitimate a confiscatory effect which would be illegitimate under other circumstances, because the constitutional protection against confiscation applies to nominal dollars rather than real property. Maybe the courts will uphold that view if it comes down to a clean-cut test. But, it is not going to attract the necessary capital to keep service going once the investor realizes that regulation has thus been turned into systematic pocket-picking, as far as his investment is concerned.

If the view prevails that a cost basis of rate-making is valid, no matter what happens to real value trends, then *nothing* stands in the way of continuous confiscation of past investors, as the purchasing power of the dollar continues to fall. Under that view the shareholder of a utility company has no more protection from loss by inflation than the holder of a savings bond or any other obligation payable in fixed dollars. In actual effect, it perverts his status. He no longer has a title in property but only a promise to pay in

paper money. If anything, he is in a worse position than the bondholder, who is at least protected by a maturity date when he can take his loss (at an agreed amount) and clear out.

Competitive Rate

In my view, the purpose of rate regulation, as a supplemental objective to the purpose of regulation itself (which is to insure public service), is to approximate a competitive rate. Since we obviously cannot have a truly competitive rate for a utility business, where there is no actual competition in kind, the best substitute is to give the utility consumer and the utility investor a rate setup which comes, as nearly as possible, to what the rate would be if competition were possible in the utility business.

We all know, of course, that the industrial investor has been rewarded much better than the utility investor. And he *should*, considering the risk involved. But, there again, there must be some point of disparity at which the less favored utility operation will no longer attract the investor. Admittedly, the utility industries have been able, and should be able for a while, to attract *new* investment. It is the *old* investor whose equity is steadily diluted by the inflationary influx. How long this systematic pocket-picking can go on without impairing the attractiveness of utility investment as a group, is a serious question for regulators to consider, if they feel—as I think they should—a responsibility for long-range continuation of adequate, expanding modern-type utility service.

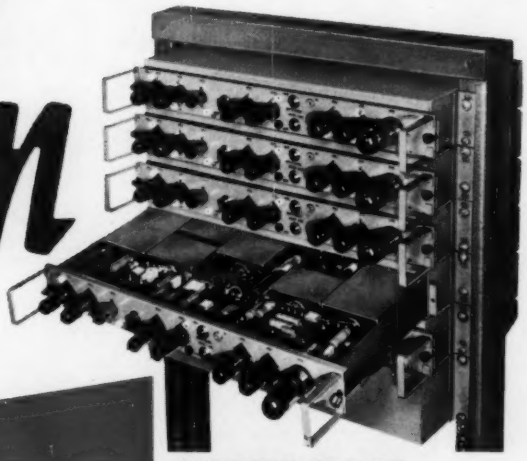
In conclusion, I regret that time does not permit me to go into important components of this central problem, such as depreciation and cost of capital. I have abstained from citing case law, or burdening you with statistics—not because such data are not available, but solely in order to concentrate on principles and basic theory.

I would, however, like to leave this thought with you as to cost of capital. As a factor in determining the return allowance, capital cost is undoubtedly an important, if not the most important, single standard. But, we must remember that cost of capital is a taillight. It is not a headlight. It reflects the judgment of the stock market as indicated in past price quotations. It cannot of its nature encompass the future.

Bearing that in mind, any attempt to delegate rate-making to the judgment of the market place—which would be the practical effort of using cost of capital as the sole or exclusive criterion of the return allowance—would, in my estimation, be a reprehensive

LYNCH *for greatest economy... highest reliability*

fm



B-620 SHORT HAUL TRUNK CARRIER SYSTEM

Lynch B-620 is a modern, proved-in system which utilizes narrow-band frequency modulation transmission and exclusive circuitry to provide reliable, economical E.A.S. and toll trunks.

LOWEST INITIAL COST Lowest initial cost consistent with trouble-free operation. Maintenance costs are substantially lower because Lynch forward-thinking engineering has improved design, simplified circuitry... has made possible the use of less... and better... components.

SIMPLE INSTALLATION B-620 has only a single control and that adjusts net circuit equivalent. Equipment is miniaturized, uses plug-in terminals. Each channel requires only 2⅝ inches of vertical space in a standard 19-inch relay rack.

AUTOMATIC REGULATION Regulation range, 0-55 db carrier line loss. Automatic... no adjustments needed.

HIGHEST INTELLIGIBILTY Voice frequency response equal to most expensive long-haul, toll carrier equipment.

A FIVE-CHANNEL SYSTEM Five channels within the frequency range of 40-190 kilocycles.

Contact your Lynch distributor for further information.

Lynch TELEPHONE SYSTEMS

LYNCH CARRIER SYSTEMS INC.
SAN FRANCISCO, CALIF.

Distributed by GraybaR ELECTRIC COMPANY

CANADIAN DISTRIBUTORS Northern Electric COMPANY LIMITED
EXPORT PHILIPS EXPORT COMPANY DIVISION OF NORTH AMERICAN PHILIPS COMPANY INC.

ALPHADUCT DROP WIRE carton packaging saves you time and money

Once you start using Alphaduct Drop Wire you will find out that the handy carton packaging has real dollars and cents advantages.

Not only does your wire arrive in perfect condition, but the sturdy carton protects it all the while it's in your warehouse.

The cartons are easier to handle than loose coils. They can be stacked higher without danger of falling and the wire on the bottom will not be crushed or bent. Space is saved, inventory taking is simplified, and the possibility of injuries to workers from tumbling coils is removed.

We try to make Alphaduct the finest, longest lasting drop wire money can buy. Quality materials are used throughout, step-testing during every phase of manufacture assures uniform high standards. Alphaduct drop wire is dated with a color coded thread so you can tell for sure how long it lasts.

Try Alphaduct Drop Wire

ALPHADUCT WIRE AND CABLE COMPANY • NEW BRUNSWICK, N. J.

NATIONAL DISTRIBUTORS • AUTOMATIC ELECTRIC SALES CORP., NORTHLAKE, ILL.
LEICH SALES CORPORATION, CHICAGO, ILLINOIS

REGIONAL DISTRIBUTORS • PANKEY SUPPLY CO., CHARLOTTESVILLE, VA.
THE LINDSAY TELEPHONE SUPPLY CO., CLEVELAND, OHIO

abdication of regulatory responsibility. It was never the intent of the legislators, in passing our regulatory statutes, to have commissions surrender their rate-making discretion to an automatic response to stock market performance.

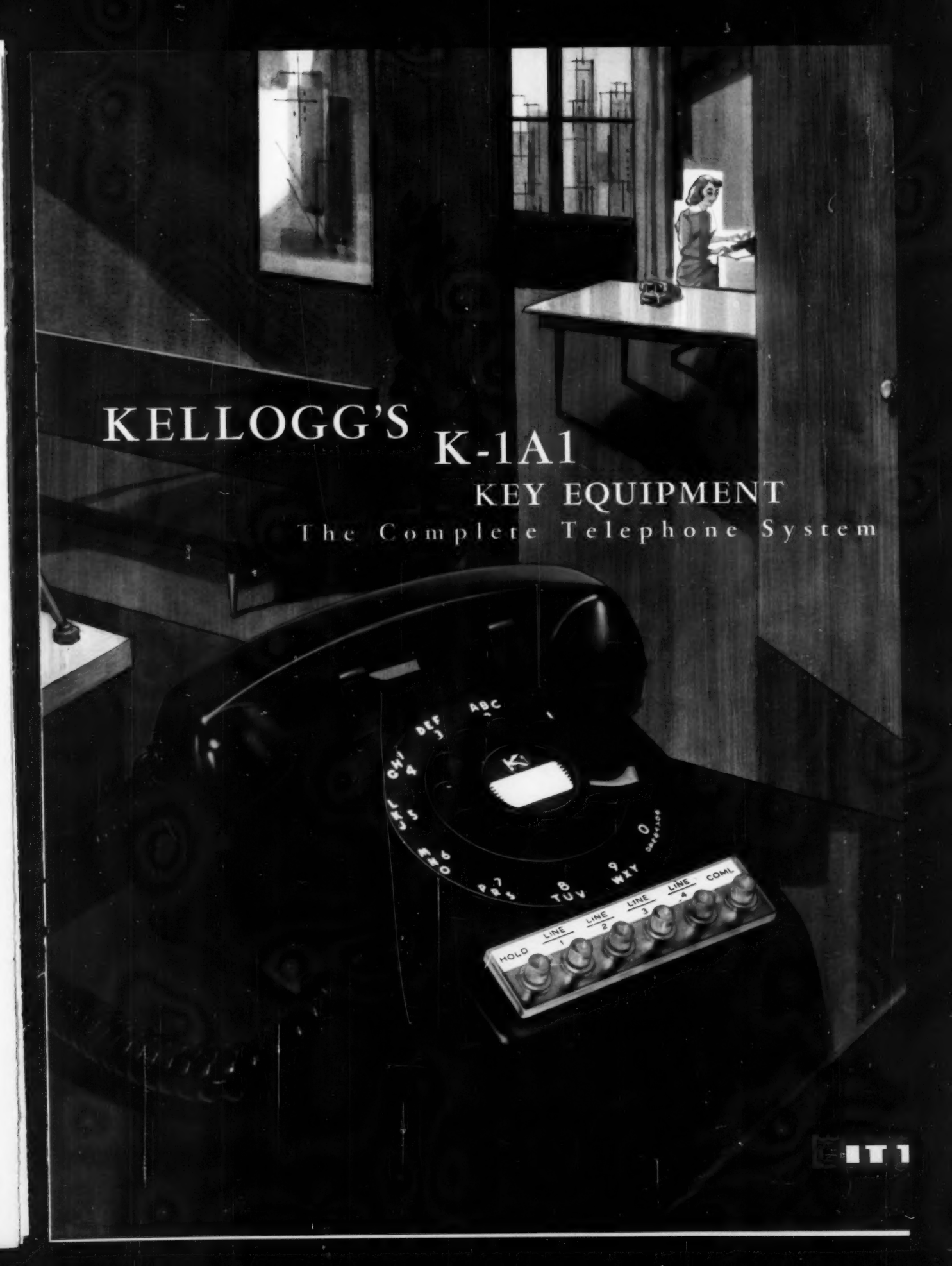
Sometimes, I think our utility companies, themselves, have gone too far in promoting the idea that rate regulation is solely to provide a return on dollar investment and not provide some rainy-day margin of surplus. When we say that only the cost of capital should be considered in the return, we are saying to the utility investor that he cannot expect to participate in the expansion of equity value which is going on every day in every other part of our dynamic economy. The return should, in my opinion, not only include some allowances for surplus, but some recognition of equity reinvested.

Every other business is conducted that way. What would you expect yourself if you were to start up a business —whether it be manufacturing or a banana stand? The very idea that the utility investment should ever be financed out of rates is, I agree, regulatory heresy under the prevailing rules. But, the day will come and you all may see that day, when, unless the utilities have some surplus to absorb the erosion of earnings under rigid rate controls in a period of constant price inflation, the profitable industry of today will become the sick industry of tomorrow.

Finally, you may ask at what point I think the inflationary factor will demand a revision of the nominal price rate base. I would not presume to give a pat formula to such a difficult and complex problem. But, I submit that when inflation reaches the point of destroying from 4 to 5 per cent of existing property value every year for as much as 10 years or more, we will have reached that point if we haven't passed it. Utility rate-making must reward the investor as well as protect the consumer, or it too will pass away and be replaced by something else we all would rather not think about.

Religion—A Way of Life

"Religion is not a perpetual moping over good books. Religion is not even prayer, praise, holy ordinances—these are necessary to religion—no man can be religious without them. But religion is mainly and chiefly the glorifying God amid the duties and trials of the world: the guiding of our course amid adverse winds and currents of temptation by the sunlight of duty and the compass of Divine truth, the bearing up manfully, wisely, courageously, for the honor of Christ. . . ."—JOHN CAIRD.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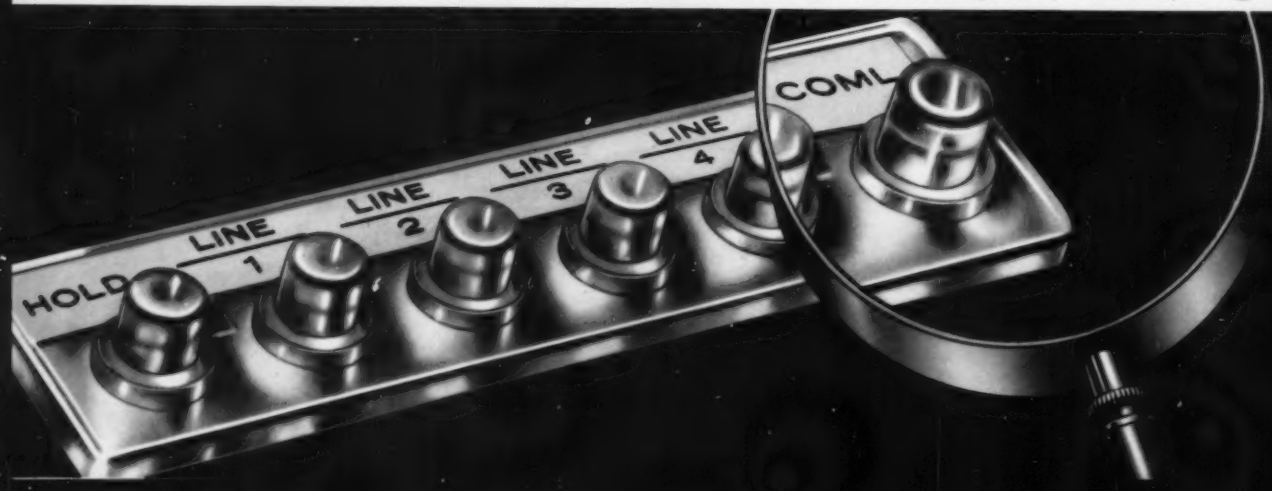
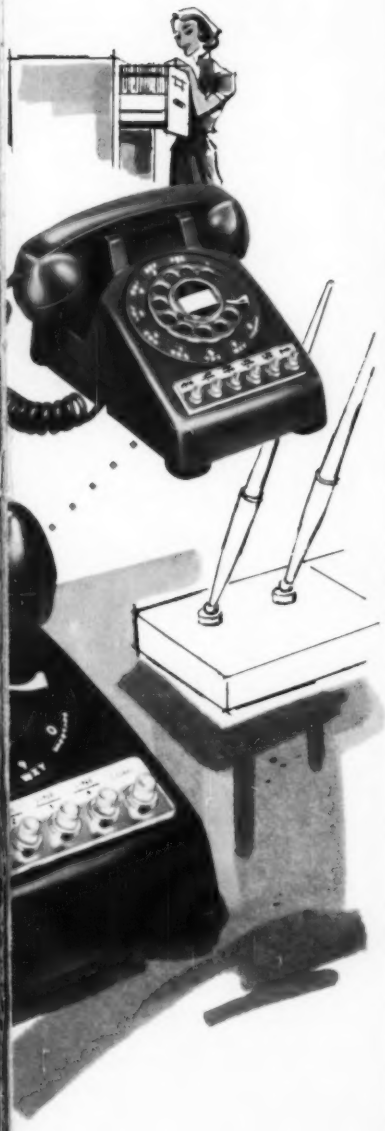




PHONE!

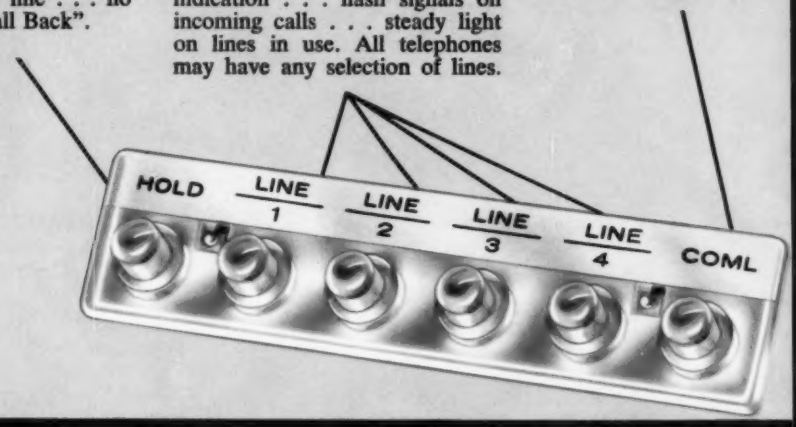
Complete Intercommunication In *One* Button. Fast and Simple — Press the "Comline" Button and Dial the Desired Party.

K-1A1 FEATURES

Just press button to "Hold" one call while using another line . . . no need to "Call Back".

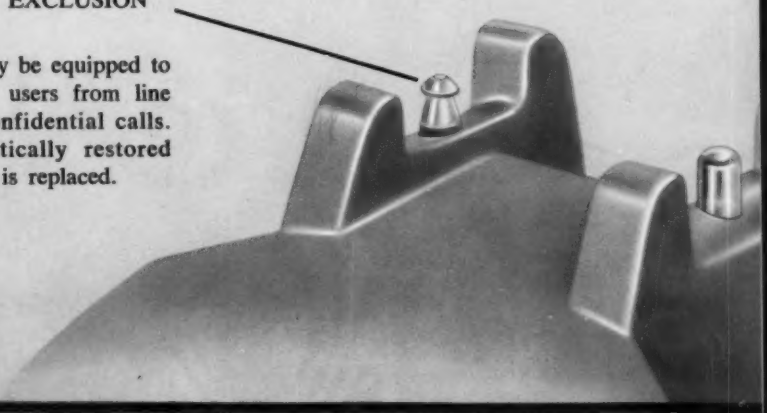
Central Office or PBX Line Buttons Illuminated for Visual indication . . . flash signals on incoming calls . . . steady light on lines in use. All telephones may have any selection of lines.

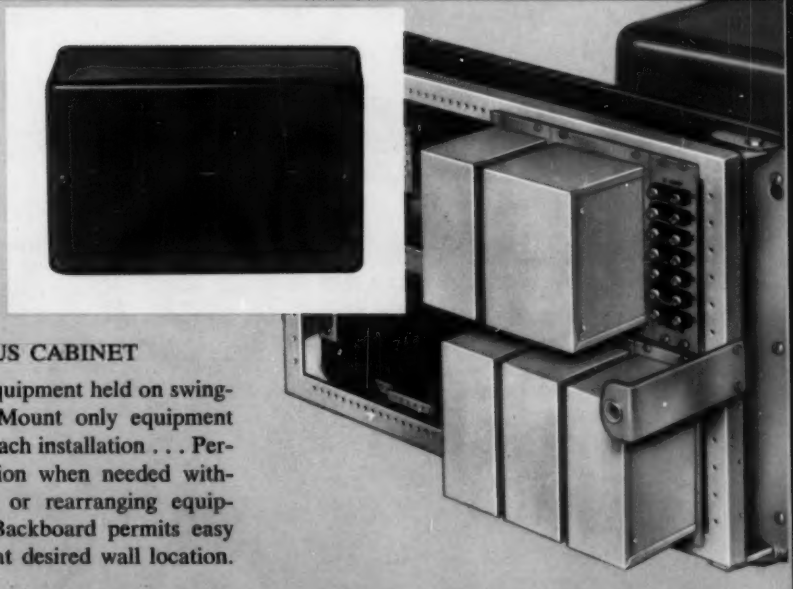
Dial or Manual Intercommunication Line.



EXECUTIVE EXCLUSION FEATURE

Telephone may be equipped to exclude other users from line permitting confidential calls. Line automatically restored when handset is replaced.





APPARATUS CABINET

Operating equipment held on swing-out frame. Mount only equipment needed for each installation . . . Permits expansion when needed without moving or rearranging equipment . . . Backboard permits easy installation at desired wall location.

MORE CONVENIENCE FROM KELLOGG

Another dual purpose convenience item by Kellogg

"Executive Exclusion" switch —Lift plunger to remove extensions from line for privacy. Coded DK-502 in standard dial telephone model.

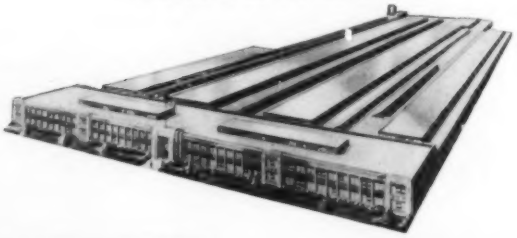
"Lift to dial or talk" switch. Eliminates party line interruption. Lift handset to determine busy condition on the party line, lift plunger to dial or talk. Coded DK 500-BA (9).

DK-544

DK-510

The four button DK-544 may be connected to three incoming lines, or like the six button, wiring may be varied to meet specific applications . . . for example, two subscriber lines and one tie-line.

By the flick of a button, one telephone serves as two. When two incoming lines are needed . . . the DK-510 Two-In-One is the answer. The full color range is also available in the two line set.



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SMALL CARS

Concluded from page 22

pairmen enjoy their flexibility and ease of handling, as well as the convenience they find in loading and unloading their tools and materials.

In addition to the "Transporters," West Coast has purchased five Volkswagen sedans, partly for "pool" transportation and partly to meet the occasional requirements of a number of microwave installations in southern Oregon. Some of these microwave stations, located on remote hills, have proved to be practically inaccessible to ordinary passenger vehicles and trucks, at certain times of the year. The Volkswagens are used for such repair and inspection trips as are necessary, at low cost, with efficiency and comfort. The little cars have proved themselves the best answer to the combination of icy roads and steep hills.

All this is a break from a fixed policy of the company, during 30 years of operation, of adherence to the "Big Three," Ford, Chevrolet and Plymouth, for its automotive requirements. The thinking behind the company's decision to "go foreign" may be expressed in this way. American automobile manufacturers appear to have lost sight of the philosophy that made them preeminent 40 years ago; they have forgotten that their greatest success was due to the policy of placing purely functional, simple automobiles in the hands of as many people as possible at as low a price as possible.

Business people are now paying too much for too much unwanted horsepower, associated with too much gasoline consumption, too much expensive maintenance, too much insurance, and in fact, too much of everything except utility at a low cost. Businessmen need something that will do essential work at a "function only" price; and that is no longer to be found in these United States. They have to go abroad.

It is to be hoped and expected that American manufacturers will answer the challenge of the light European car; and that small functional trucks and passenger cars, made in this country by American workmen, will be available at a competitive price.

Judged Best

"When a book raises your spirit, and inspires you with noble and courageous feelings, seek for no other rule to judge the work by; it is good, and made by a good workman."—BRUYERE.

Transite Telephone Ducts come in a range of sizes for direct-burial and exposed-location use, also for concrete encasement

... save on installation and maintenance with

TRANSITE Telephone DUCTS

As TELEPHONE SYSTEMS grow in size and complexity, so does the need for dependable and economical protection of vital telephone cables. And J-M Transite Telephone Duct is getting ever-increasing preference as the Number One underground cable protector.

For Economy "down the line," Transite Ducts install faster—provide a better return on daily production. They permit smaller crews to attain faster laying rates. After the Ducts are in, savings on rodding and other maintenance further reduce job costs.

For Speed "down the line," Transite Ducts come in long, easy-to-handle 10-foot lengths with "glass-smooth" interiors for long cable pulls. Ducts can be joined quickly and securely with the J-M Plastic Coupling now used widely by the industry. And when called for, a variety of Transite fittings are available to meet usual installation requirements.

If you need ducts for direct burial or for exposed locations, specify

J-M Transite C Telephone Duct.

For concrete-encased ducts, specify

J-M Transite B Telephone Duct.

Because Transite Ducts are made with durable, non-decaying minerals of the earth—asbestos and cement—they're "at home" in the ground . . . can't rust, rot or corrode. They protect lines against fire, weather and wear . . . are immune to electrolysis.

Why not have a Johns-Manville industry engineer explain all the cost-saving advantages of Transite Duct. Or if you'd like information beforehand, write for TD-78A. Johns-Manville, Telephone Dept., Pipe Division, Box 14, New York 16, N.Y. In Canada, Port Credit, Ontario.

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KOPPERS POLES

One of California's First Operators Recalls Experiences

By GEORGE A. BRIDGES*

"LIFE travelled at a much slower pace when I became the first telephone operator for the old Smeltzer Home Telephone Co.," said Mrs. Harry B. Anderson of 1919 North Broadway, Santa Ana, Cal., in an interview.

MRS. H. B. ANDERSON

When asked what she did as the first telephone operator in the Huntington Beach-Smeltzer area, Mrs. Anderson replied: "All I had to do was turn a crank, but I did work long hours—12 to be exact. Since I was catering to about 100 subscribers in those days, I got to the point where I knew who they were by their voices or by the way they rang."

When Mrs. Anderson speaks of "those days," she means 1903, when as a girl of 20 she was asked by John B. Lawson, first superintendent of the Smeltzer Home Telephone Co. if she would like to be a telephone operator. After considerable debate, she accepted the job.

"I was criticized by some for accepting this position, for during this era it was not considered the most 'ladylike' thing to do," Mrs. Anderson continued. "Most girls of 20 were busily engaged in lace handiwork and other domestic chores, and in essence, working much harder than I," she added. "Being self-sufficient, however, gave me a great deal of personal satisfaction."

The Smeltzer Home Telephone Co. occupied a small room in the Herbert Phelps General Merchandising Store, located at Smeltzer Road and the railroad tracks in Smeltzer. This company later sold all its holdings to the Huntington Beach Telephone Co. in 1925. Five years later Associated Telephone Co. (now General Telephone Co.) acquired the Huntington Beach Telephone Co.

Mrs. Anderson's brother, J. D. Phillips (now of Three Rivers, Cal.), worked in the Phelps General Store all day and then relieved Mrs. Anderson at the end of the day to take over the 12 hour telephone night shift.

"Tracing back to those early days, although I have a very good 'forgettery' I can still see my husband hauling freight from the South Pacific Railroad lines to Mercereau's General Merchandising Stores located in Anaheim, Garden Grove and Westminster," Mrs. Anderson stated. "At this time the three stores each had a phone and could call each other. My husband, Harry, felt since he might be needed in an emergency, he would hook a phone to these three lines by leading a wire to two telephone poles from his own wire fence. The fence ran for a quarter of a mile along his property to the farm, where he hooked another wire from the fence into the house and attached it to his phone. This worked very adequately, much to Harry's surprise, and saved him many trips to the stores for instructions," she said.

Born of a pioneer family who came to California during the Gold Rush period, Mrs. Anderson states she was "born right in the center of Pershing Square in downtown Los Angeles, site of the first maternity home in the city.

"My job as operator was pretty slow at times and I would often help wait on customers in the store during the slack period. The remaining time I would handle calls and keep small accounts," said Mrs. Anderson. "Today's Westminster and Huntington Beach operator probably handles more calls in an hour than I handled in an entire day. It's a fascinating occupation and if I hadn't married in 1905 I would undoubtedly still be with the telephone industry in some capacity or other, for it's the kind of industry that gets in your blood—and stays."

*Mr. Bridges is Press Relations Coordinator for General Telephone Company of California.

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for jacketed conductors
Preformed Dead-Ends grip firmly, yet jacketing material won't creep
There is only one way to efficiently dead-end self-supporting cable, C-rural wire and B-rural messenger: Apply Preformed Dead-Ends over the jacket.
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For more information about dead-ending weatherproofed and insulated conductor and messenger, write PREFORMED LINE PRODUCTS COMPANY, 5349 St. Clair Avenue, Cleveland 3, Ohio. Cable Address: Preformed-Cleveland . . . in 10 years the leading manufacturer of armor rods, dead-ends, Guy-Grip dead-ends, and other line accessories.
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You can look up to Preformed
Made in accordance with or for use under U. S. Patent No. 2,761,273. Other patents issued and pending.

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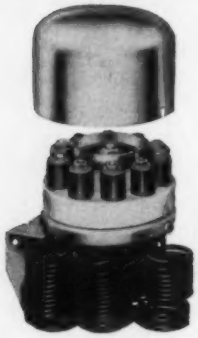
Automatic Constant Voltage Charger—operates without moving parts. Compensates for changes in input voltage load. Single-Phase Fiotrol in the 24 and 48 volt types are available in range of sizes from 1 to 24 amperes. LORAIN PRODUCTS CORPORATION.

Joslyn R.E.A. Standard Wood Cob Steel Pins—Joslyn J1187 ⅝-inch Steel Pin is assembled with a J139 lock washer and square nut; the Joslyn J1188 pin has two 2" x 2" x ⅛" square washers, nut, and M-F locknut. Cobs are of seasoned Oak or Locust boiled in paraffin. Pins are forged, high carbon, open-hearth steel, hot dip galvanized.
JOSLYN MFG. & SUPPLY COMPANY.

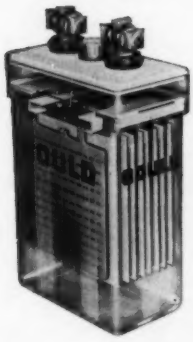
World Standard for Quality since 1870, Hemingray Insulators—a product of OWENS-ILLINOIS. Available in a variety of styles and sizes for immediate delivery. No. 45—shown—employed for all toll and trunk circuits exceeding ten miles in length.



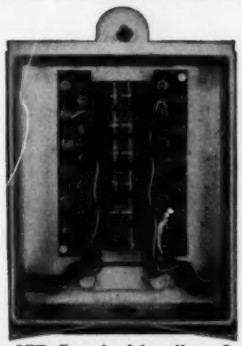
5-Circuit Power Cross Protector provides a single assembly for 5 circuits to be mounted on a 10-pin arm requiring only a single ground wire. Easy to install—use only 3 mounting screws. Made by COOK ELECTRIC COMPANY.

It is good business to have supplies available when you need them so that your linemen are not held up. But you do not have to tie up a large amount of capital. Kellogg will back up your inventory for you. Many operating companies rely on Kellogg to do this because Kellogg devotes more warehouse space to serving the Independent Telephone Industry than anyone else in the business The supplies are in stock waiting for you. Shipments are prompt. You get the supplies you want, *when* you want them!

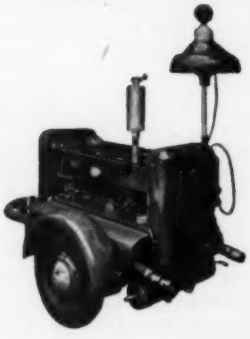
supply inventories for you



Outstanding Battery Performance is yours when you choose Gould Planté Batteries. Thick, grooved, pure lead positive plates give many years of trouble-free service! Made by GOULD-NATIONAL BATTERIES, INC., the finest money can buy.



Type 177 Terminal-Loading Case. A cast aluminum combination terminal box and housing for loading coils. For use with the new rural distribution wire for 6, 11 and 16-pair capacity. Available in 8 types. Terminals, available with or without protectors, accommodate loading coils of 88MH or 44MH inductance. COMMUNICATION EQUIPMENT & ENGINEERING CO.



Mobile Power Unit for use by telephone cable splicing crews, for lighting, operating solder pots, solder irons and electric blowers for ventilating manholes, with a centrifugal or diaphragm pump to keep the manholes dry. S & G MANUFACTURING CORPORATION.

Kellogg's Standard Outside Plant Handbook now available at special price while quantities last. Reduced to $2.75 a copy, with ten or more copies priced at $2.50 each. Every phase of outside plant telephone pole line construction is covered in book.

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URBAN UNDERGROUND DISTRIBUTION PLANT

Continued from page 30

able for making a complete all underground plant with the service connections terminated below ground where flooding or other conditions prohibit the placing of ready access pedestal terminals, any trouble locating work or plant rearrangements must be accomplished by expensive hand digging. This is costly under extreme weather conditions. A depth of 30 inches for distribution cable, and 20 to 24 inches for the service entrance wire, is believed to be satisfactory. These same depths will generally be adequate with certain exceptions, when other utilities are placed in the same easement.

Experience indicates it is desirable that each subscriber's service entrance be located on his own property and in a line perpendicular to the main cable trench. Under this plan, many of the service wires will be placed a short distance in the common trench with the cable from the terminal to the point where they branch off to the subscribers' premises. This will, in some cases, result in the use of additional service wire, but will pay dividends in future trouble location and maintenance work. It will be extremely helpful in avoiding service crossovers if both the electric and telephone services are routed in this manner.

All buried services should be placed during the initial installation of the distribution system insofar as building progress will permit. Where basement foundations and walls have been poured the service should be placed complete, leaving sufficient wire coiled at the basement wall to finish the entrance. For the most part, the building entrance can be made by drilling a hole between the top of the foundation wall and the building joist plate or first course of brick. It may be possible to arrange with the builder to have entrance sleeves placed through the foundation wall.

When the complete service entrance cannot be placed to a house foundation (vacant lots or foundation not started), it is still common sense to place the service wire in the trench with the cable, between the terminal and the point of exit to the future premise, leaving enough wire coiled in the trench to reach the building site. The location of this coil can be readily found by the use of available testing equipment.

Progress

Where buried distribution systems have been installed in the past, using conventional facilities, tools, and methods then prevailing, the cost to be billed to the subdivider in excess of standard aerial construction has been quite substantial. The development of plastic cable and "ready-access" terminals has greatly reduced splicing and terminating costs. We now have enough cost data to show that the new designs in equipment and improved construction methods have reduced the cost of buried distribution plant to where it now is economically feasible.

Buried distribution cable and terminals can, under average conditions, be placed at costs equivalent to those for the pole lines, cable and terminals of the latest design. The buried service connections, however, will in general result in costs somewhat higher than for aerial drops. Considering the buried feeder cable system and services as a whole, a complete buried installation in selected locations should not cost much more, if any, than conventional aerial construction.

In our company, buried telephone distribution plant is furnished to subdividers and builders on an excess cost basis. They are given the choice of two plans:

(1) All work can be done by the telephone company and the excess cost billed to the subdivider.

(2) Subdivider digs and backfills all trenches including service entrances with the telephone company performing all other work at no charge.

Until further experience can be obtained and more equipment becomes available for this type of construction, it will be advisable for us to continue to furnish buried distribution service on the present basis of excess costs. In developing this cost differential all aerial plant costs, including the average installed cost of aerial drops, should be weighted against the cost of complete buried plant.

Customers seem to prefer buried plant for appearance reasons. It is also desirable because it provides a more nearly trouble free service. The need for tree trimming is eliminated. From a telephone company standpoint these same advantages constitute an offset to the disadvantages of the more expensive repair of underground troubles when they do occur.

Maintenance History

Trouble experience with buried distribution plant, which covers many years, shows that very little trouble results from physical damage, such as

dig-ups and fence posts but rather most of the faults have resulted from deterioration of the early types of sheathing and insulating materials. The newer polyethylenes and neoprenes are much superior materials and should remain trouble free indefinitely. We have replaced several old service wires with the new types, using the small trencher with the narrow width trench. The costs were perhaps 50 per cent higher than original costs but there was no adverse subscriber criticism due to lawn disturbance.

Where it does become necessary to locate buried plant it can readily be done with available test sets and generated tones. Power cables and wires are easily located by available equipment.

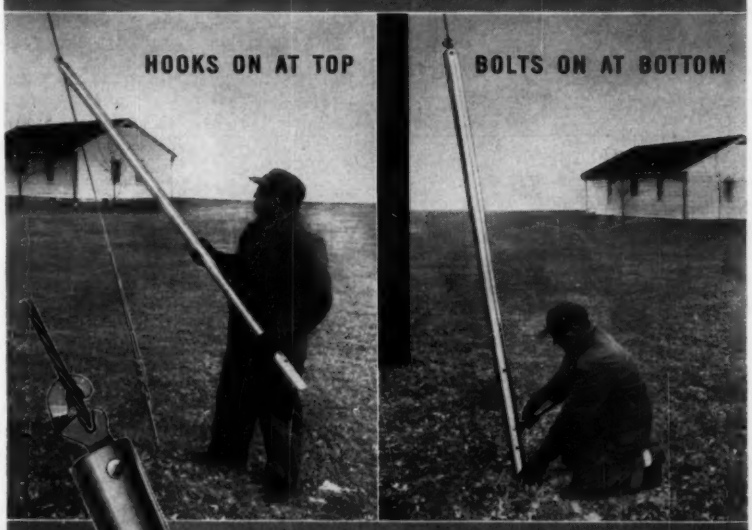
The Future

Now let us have a look at what the future may hold for complete buried distribution plant. The value of a buried distribution system might be questioned unless it can be installed and maintained at less cost than aerial plant. Otherwise, there must be other real advantages that outweigh any excess costs that are incurred. The two principle advantages that may be cited for discussion are appearance and freedom from service interruptions caused by hurricanes, sleet and other storm damage. Also, the public is becoming increasingly critical of service interruptions as well as of appearance as evidenced by the growing number of requests for buried plant by subdividers and developers.

To obtain the benefits of appearance, both the electric and communications plants must be placed underground. Esthetically nothing is gained by placing one underground and not the other. We are told that the development of suitable materials and methods for buried plant in the electrical industry is behind that of the communication field and the excess costs are quite high. Consequently, a subdivider's decision to have all buried facilities rests largely on the excess cost of the electrical distribution system, rather than on the small excess cost for buried telephone plant.

Some of the electric companies are, however, striving to solve the problems of buried electrical distributions. The Aug. 12, 1957, issue of *Electrical World* contains a special report on "Trends in Underground Distribution" which includes a report by the Commonwealth Edison Co. of Chicago on their operating experience and efforts to reduce the cost differential between overhead and underground plant in the Springdale subdivision previously discussed.

Question: What makes the CHANCE 808 GUY GUARD the groundman's preference?



Answer: Ease of Installation!

Single bolt at lower end of guard fastens to guy rod . . . or to guy wire . . . or to guy loop. You get proper installation every time.

Guy Guards that are easy to install are easy to get installed where and how you want them. The Chance 808 is an inexpensive guy guard designed for fast, easy installation. Even a midget can install it—there are no high bolts to fasten at the top—only one bolt at the bottom.

The 808 hooks easily around the guy wire at the top. The hook binds to hold tight when bottom of guard is brought into position. Hook holds guard away from wire to eliminate noisy vibration. Flanged edges of hook prevent strand cutting, and help to keep guard in position.

Economical too!

The Chance 808 is economical in first cost . . . in labor costs . . . and in service. It is made of heavy gauge steel, hot dip galvanized for long life and high visibility. Edges are turned in for extra safety and rigidity.

Get the Chance 808 from your Line Equipment Wholesaler. Your groundmen will like its features . . . and you'll like the savings.

A·B·CHANCE CO.
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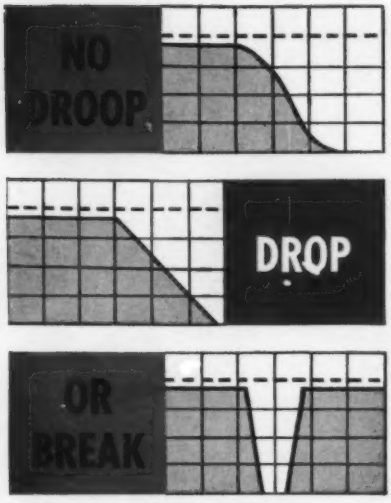

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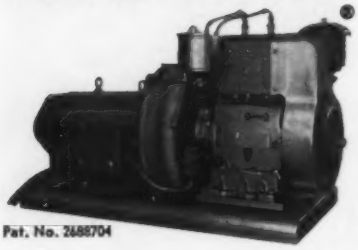

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In spite of excess costs, a number of subdividers and developers looking into the future have recognized the inherent values of underground utility installations and are already proceeding with all buried plant within their respective subdivisions. Foremost among these is the Centex Construction Co. now constructing Elk Grove Village, about 20 miles northwest of Chicago's loop. It is planned as a community of 6,000 homes with a large shopping center to be completed within the next four years.

The development of this community and the plans for all buried plant were written up in the May 1957 issue of *House and Home*. Also worthy of mention is the 3,000 home Winston Park development with complete shopping center at Palatine, Ill.

Both of these developments are well under way. Both will have all buried distribution plant. In both, the developer will dig and backfill all trenches for electrical and communications plant. Both will be under careful observation throughout the installation period to gain further experience in the art of placing distribution plant underground.

Altogether, there are about 20 active subdivisions in Illinois Bell Telephone Co. territory containing over 12,000 lots which are signed up on an all underground utility basis. All power and telephone cables and wires will be buried with no conduit or handholes used.

Why Excess Cost?

In conclusion, I would like to ask this question—"Why should telephone buried distribution systems continue indefinitely to cost more than the conventional aerial distribution plant?" Consider the following facts:

(1) The same cable is placed in the buried plant that is placed in aerial construction. (The cable might be somewhat larger to insure longer facility life.)

(2) The same number of ready-access terminals are used in the buried plant that are placed in aerial construction and cost no more complete with pedestal.

(3) Splicing costs are no more and usually less than for aerial plant.

(4) No poles to set or climb.

(5) No anchors to install.

(6) No ladders or platforms to swing.

(7) No strand to place, a saving of $.04 per foot in material.

(8) No trees to trim.

(9) Practically no service wire hardware.

(10) The cost per foot of line for poles, anchors and labor for placing cable and strand equates to about $.46. On an equitable joint use cost basis, the telephone company's share of a pole line and associated anchoring will equate to an average of about $39 per pole which on a 130-foot average s an equates to about $.30 per foot of line. Placing the average size aerial cable and strand costs about $.16 per foot.

(11) The cost of trenching, placing cable and backfilling at the rate of only 1 foot per minute will equate to about $.40 per foot of line. This is based on the use of three men, one trencher and one truck; placing cable in trench and backfilling 360 feet per eight-hour day at a cost of $150.00.

Now a little arithmetic will show that if we add $.04 per foot for the cost of strand to the $.46 per foot established under (10) above, then the aerial costs are $.50 per foot. The buried costs are only $.40 per foot, or a saving in the cable and terminal part of the buried plant of $.10 per foot. And remember this is at the rate of only 1 foot per minute trenching speed and almost any little old trencher can do that well.

In considering the comparison of service wire costs, I would like to point out that, in many cost comparisons of complete buried distribution systems *vs* the conventional aerial distribution plant, the cost of the aerial drops often have never been included. It has been proved by trials that aerial drops can be installed at much less cost on a mass installation basis than under the conventional service order routines, but since the service order routine is the method under which drops are being installed today any comparison must be on that basis. While book costs will show about $17 per drop, I am using $15 as a more realistic figure.

Since the buried services are placed at lesser depth, 20 to 24 inches, trenching speed is effectively doubled, and with the same equipment and men, the costs will be $.20 per foot. Assuming that the average length of entrance trench will be 75 feet, the placing cost is $15. This would be 10 buried services per day. The material will average $4.00 per service, making a total of $19 each for the buried services.

Now let us assume for the moment that we have an 800 foot block with 24 lots:

(1) Buried distribution cable at a saving of $.10 per ft.	= $80.00
(2) Buried service entrances with excess costs of $4.00 each	= $96.00
Total Excess Cost	= $16.00
Grand Total Excess Cost per Lot	= $ .67

Conclusion

Based on our trials in the Illinois Bell Telephone Co., we are of the opinion that only modest improvements

in trenching and backfilling equipment and construction methods are needed to make all underground telephone plant, urban and rural, as cheap as aerial installations. Even if this were not so, the savings in maintenance costs, public demand for better appearance, and greater safety will prove in buried plant. These conclusions are supported by many other companies who have given serious consideration to modern design and methods. If we miss our guess for future needs and must reinforce buried plant it will be expensive certainly, but in most subdivisions we know pretty well how many homes will be built in each block and we trust that eventually every house will be at least a one-party telephone user. We can't go far wrong if we design facilities on that basis.

It is our contention that outside telephone plant, all underground, belongs in the era of the electronics switching machine.

Tennessee Co-ops' Progress Lauded In Newspapers

Currently, the DeKalb Telephone Cooperative, Alexandria, Tenn., has 2,500 subscribers. Within four years, according to Manager Ed Hildreth the cooperative expects to serve 4,000 subscribers through eight exchanges at Alexandria, Woodbury, Milton, Norene, Liberty, Temperance Hall, Smithville, and Gordonsville.

"This is a pretty remarkable accomplishment considering that back in February 1951 the DeKalb system was severely damaged in an ice storm," says Mr. Hildreth.

The storm is referred to as a "blessing in disguise" in a story which recently appeared in the *Nashville Tennessean Magazine*. The article chronicled the recovery which has led to the modern DeKalb company.

The report entitled "Bells Up The Hollow," and written by Elmer Hinton, gives credit to civic-minded citizens who banded together under the leadership of the local Lion's Club in June 1951, and by December 1953, with the aid of money borrowed from the REA, were serving 500 subscribers through three exchanges, Alexandria, Liberty, and Temperance Hall.

Both the *Tennessean's* story and a story which appeared in the *Smithville (Tenn.) Review* laud the work of "Mr. Telephone," 34-year-old Ed Hildreth. An electrical engineer and a graduate of the University in Tennessee, Hildreth is described as having one aim in life "for everyone in the area who wants one, to have a telephone at a price they can afford to pay."

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REA Announces Recent Telephone Allocations

THE RURAL ELECTRIFICATION ADMINISTRATION has approved the following rural telephone loans:

Progressive Rural Telephone Co-op, Rentz, Ga.; $249,000; May 6.

The cooperative proposes to use these loan funds to improve service for 102 existing subscribers and to furnish initial service for 178 farm families. The present subscribers are now receiving magneto service from the Dudley Telephone Co. The cooperative plans to acquire, rehabilitate, and integrate these facilities.

The borrower's present plans include a new automatic central office in Dudley to serve the expanded area. Provision has been made in the loan to complete the previously authorized system, and to construct a new commercial office building.

Its two REA loans which total $713,000 will enable the borrower to provide new and improved service for 1,141 rural subscribers. The system will consist of five exchanges, all of which are in operation providing dial service to approximately 540 rural subscribers.

C. J. Burch is president and Leland E. Wells is manager of the Progressive Rural Telephone Co-op.

•

Loretto (Tenn.) Telephone Co.; $214,000; May 6.

This loan will enable the borrower to acquire, rehabilitate, and expand facilities of the Ethridge Telephone Co. The 268 subscribers now receiving magneto service through Ethridge will get improved service, and 208 rural families will be provided with initial telephone service.

A new automatic central office will be constructed in Ethridge. A total of 1,700 rural subscribers will benefit through the two REA loans to this borrower totaling $764,000. Automatic central offices will be located at Ethridge, Leona, and Loretto.

Ralph J. Passarella is president and manager of the Loretto Telephone Co.

•

Sikes Telephone Co., Glennville, Ga.; $485,000; May 9.

The new borrower plans to use these funds to improve service for its 668 present subscribers and to furnish initial service to 558 farm families in its area. At present it operates an automatic central office at Glennville. The borrower seeks to acquire the building presently housing commercial and central office equipment, and to improve and expand the automatic facilities.

A portion of this loan will be used to refinance the borrower's existing indebtedness incurred in converting the present system to automatic operation.

Aubrey E. Sikes is both president and manager of the Sikes Telephone Co.

•

Grand River Mutual Telephone Corp., Princeton, Mo.; $635,000; May 9.

These funds will be used by the borrower primarily to furnish initial service to 769 subscribers over its whole system which covers a large area of north central Missouri and south central Iowa.

Provision is also made for improved service for 125 existing subscribers and initial service for 180 farm families. In addition, a portion of the funds will be used to complete the authorized system.

These existing Iowa subscribers are now receiving magneto service from a few small systems in the southern part of the state. Grand River expects to acquire three of these properties by abandonment: The Millerton Telephone Co., the Confidence Telephone Co., and the Cambria farmer-owned switcher lines. In addition, the borrower plans to acquire the Cambria Telephone Co. with loan funds.

A new automatic central office is scheduled at Millerton. These added facilities will enable Grand River to provide new and improved service to the Iowa subscribers.

REA loans to Grand River total $6,222,000 which will enable it to furnish new and improved service for 12,804 subscribers. Nineteen of the proposed 28 exchanges are now providing dial service.

Arnold Lovett is president and C. W. Chastain is manager of the Grand River Mutual Telephone Corp.

Vacation and Home Booklets Released by Safety Council

The National Safety Council has released two new publications, a 36-page home emergency booklet and an eight-page vacation safety pamphlet.

The home reference booklet, "What to Do about Home Injuries," covers the

treatment and prevention of everything from animal bites to nosebleeds. It provides a list of articles to keep on hand for emergency treatment of home accidents, and a directory page for listing emergency phone numbers.

Contents of the booklet have been approved by the American Medical Association and the American National Red Cross.

The vacation safety pamphlet, "Have Fun," shows how vacations can be safe as well as fun. It stresses, "Make your comeback in tip-top shape by planning your vacation for fun, rest and safety." "Have Fun" gives pointers on subjects ranging from sightseeing to sports.

Further information and quantity prices on the publications may be obtained from the National Safety Council, 425 N. Michigan Ave., Chicago 11, Ill.

N. E. Swanson Named Pa. Independent's Treasurer

New treasurer of Peoples Telephone Corp., Butler, Pa., is Norman E. Swanson, a veteran of 39 years in the telephone industry, and a member of the staff of the Peoples company since 1949.

N. E. SWANSON

Mr. Swanson joined the Peoples company nine years ago as general auditor, moving to controller in 1954. He was chosen as treasurer at the Peoples company's recent annual directors' meeting.

A graduate of the Hamilton Institute of Advanced Accounting in Chicago, he began his business career in 1916 as a cost accountant.

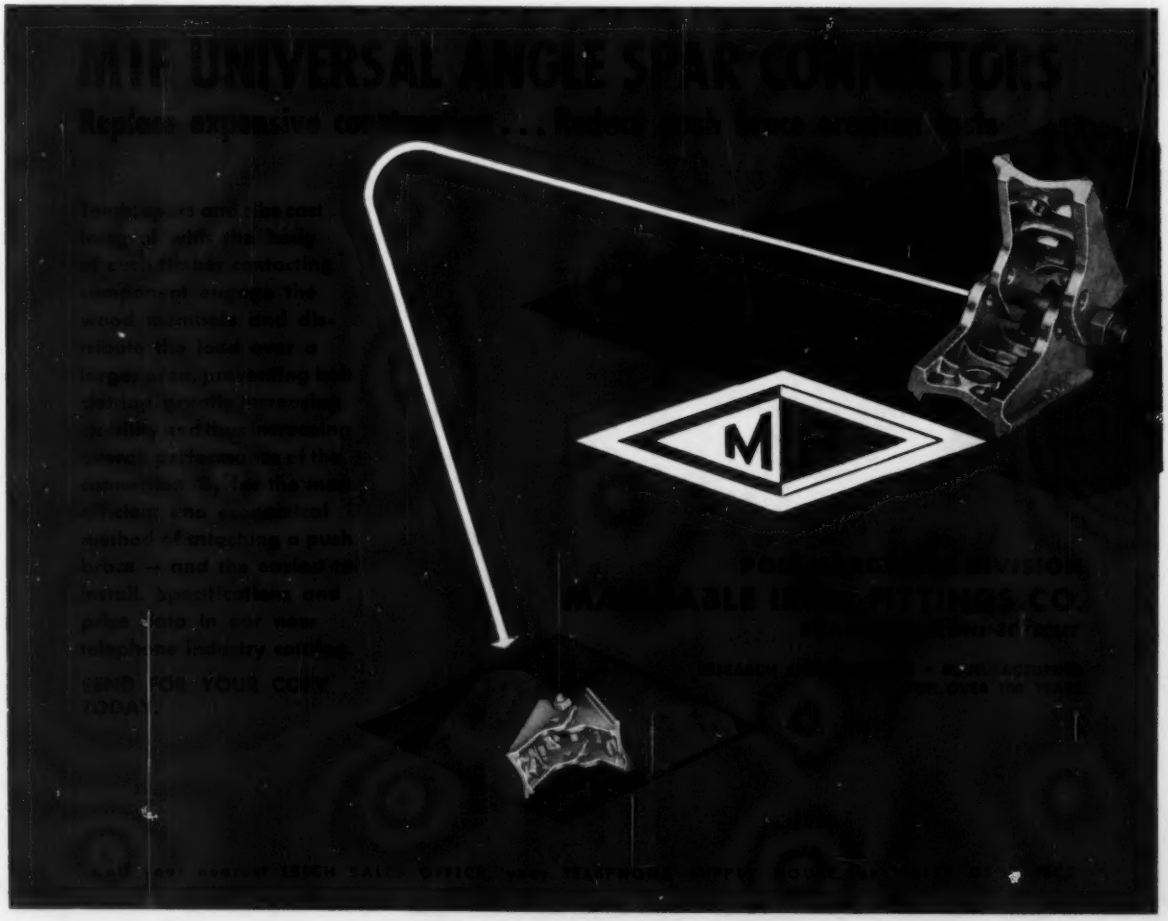
He then served for two years with the Army's 15th Cavalry at the Mexican border and with the A.E.F. in France.

In 1919 he was employed by the old United Home Telephone Co. of Muskegon, Mich. (now General Telephone Co. of Michigan), where he began as a bookkeeper and advanced to general auditor in 1921. He joined the old Associated Telephone group (now General Telephone Corp.) as a traveling auditor in 1926.

In 1927 he became secretary-treasurer of a group of companies including Central Cities Telephone Co. and subsidiaries; Iowa State Telephone Co. and other operating companies; Central Telephone Co. and subsidiaries; and Indiana Central Telephone Co. and subsidiaries.

Joining the Commonwealth Telephone Co., Madison, Wis., in 1930, he became assistant general auditor of the Central operating group of the Associated Telephone Co.

In 1931 he returned to Muskegon,



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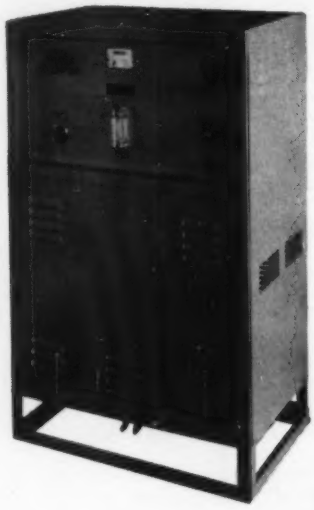

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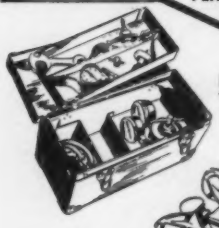
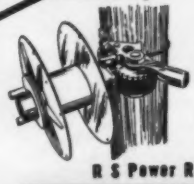


Pressure Testing Kit



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Mich., as state commercial superintendent of the Michigan Associated Telephone Co. (now General Telephone Co. of Michigan). He was with the General System for 18 years prior to going to Peoples Telephone Corp.

Jarmon Named V.P. of General Telephone Corp.

W. R. Jarmon has been elected vice president-revenue requirements of General Telephone Corp., according to an announcement by General system's president, Donald C. Power.

W. R. JARMON

In commenting on Mr. Jarmon's election, Mr. Power said, "With the rapid growth of General Telephone, our most important obligation is to make certain that earnings keep pace with our expansion. This is of great concern to management, investors, and employes. We need here at our New York headquarters a responsible officer who can devote his full attention to changing economic conditions, and who can keep our companies advised of the need for re-pricing their facilities and services. We are determined to take whatever steps are necessary so that General Telephone may earn adequately on its capital investment."

Mr. Jarmon graduated from Oregon State with a degree in electrical engineering, and from The Stamford Graduate School of Business Administration. He worked with the Bell System from 1929 to 1937, at which time he accepted an appointment with the California Public Utilities Commission. From 1941 to 1946, he was on active duty with the Signal Corps. Following his military service, he was appointed to the staff of the Federal Communications Commission where he worked from September 1946 to February 1951. He left the Federal Communications Commission to accept an assign-

A. J. BARRAN

ment in General Telephone System, and has most recently been president of General's subsidiary telephone company in the Northwest.

A. J. Barran has been elected president and a director of General Telephone Company of the Northwest.

Mr. Barran has been public relations director of General Telephone Company of California. Prior to that assignment, he had filled various operating positions in the commercial department of the California company.

Mr. Barran graduated from Denison University in Granville, Ohio, in 1941 with a Bachelor of Arts Degree. During the war, he was in the United States Navy for 4½ years, and was discharged in 1946 with the rank of lieutenant commander.

Alaska Association Plans For Eighth Annual Meeting

The eighth annual Alaska telephone association meeting date has been set for July 28, 29, and 30 at the Baranof Hotel, Juneau, Alaska, instead of as originally scheduled for the middle of August.

Members felt that the slightly earlier date would give the companies participating a longer time to prepare various studies that would have to be ready by the beginning of the new year, and allow sufficient time for legislative matters to be considered before the next session of the Territorial Legislature.

The Golden North Salmon Derby being held in Juneau from July 25 through the 27 was also an inducement to some of the members to come early to take part in the sport fishing and the derby.

Program material is being gathered and an outline of events will be sent out early in July. Program ideas to be brought up on the agenda should be submitted to H. R. Zinns, telephone superintendent, City of Anchorage, P.O. Box 400, Anchorage, Alaska.

Hotel and display space reservations can be made through Mrs. Verna Carrigan, Juneau-Douglas Telephone Co., 204 Main St., Juneau, Alaska.

General of O. Names Safety, Training Supervisors

Edward F. Egg, former general plant training supervisor, has been appointed director of safety, Clare E. Williams, president of General Telephone Co. of Ohio announced on May 12. He will be responsible for the safety program of the company which operates in 171 exchange areas in Ohio.

Mr. Egg started his telephone career as a traffic engineer trainee with an affiliate company at Erie, Pa., after receiving his discharge from the Army in 1946. Shortly after his promotion to junior equipment engineer in October, 1950, he was transferred to Marion, O.

Say mister, is this pole gonna be here from now on?
Maybe not from now on, but it will last for years and years. That is unless it's struck by lightning or something. This is a T-C pressure treated pole. T-C's pressure treatment makes 'em last. Our company uses T-C poles all the time. We found they last . . . almost from now on.
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The promotion to his present position was achieved gradually as he stepped from senior equipment engineer in 1953 to general plant training supervisor in January of 1955, which position he held until now.

Replacing Mr. Egg as general plant supervisor, will be V. L. Brady, former general traffic engineer. He will be in charge of the company's technical training school which provides specialized courses of study for all plant employes.

Mr. Brady, a native of Marion, has been employed by General Telephone since 1936.

A switchman at the beginning of his telephone career, he left Marion for the Army Signal Corps in 1941 and returned in 1945. Promoted to central office foreman in 1951, he has held various positions in the plant and traffic departments up until the present time.

B. H. Case Re-elected Head Of Ohio Independent

Baxter H. Case, of Hudson, O., was re-elected president of the Thompson Telephone Co. and vice president and general manager of the Chardon Telephone Co. by the board of directors of the two companies following the annual shareholders' meeting in Chardon, O.

B. H. CASE

Mr. Case also is secretary of the Western Reserve Telephone Co., Hudson. The Thompson company is operated as a subsidiary of the Chardon company.

In 1957 the Chardon Telephone Co. completed a $60,000 expansion and improvement program which utilizes the 2-5 numbering system. The program will be extended through 1958. It includes the enlargement of the telephone building, the building of a garage and warehouse, and the installation of central office equipment and considerable outside plant. The estimated cost is $150,000. The equipment in the two Thompson exchanges was replaced at a cost of $80,000 and the 2-5 numbering system initiated.

Mr. Case is a member of the well-known Ohio telephone family which consists of Weldon W. Case, president of The Western Reserve Telephone Co. and The Elyria Telephone Co., Nelson H. Case, vice president and general manager, and Theodore H. Case, commercial manager and treasurer of the Western Reserve Company.

Baxter Case has been in the telephone business since his early school days, working during his high school and college vacations in all departments of the Western Reserve company. Following his graduation in 1950 from Ohio University, he became actively associated with the company, becoming commercial manager as well as treasurer. In December 1956 he went to the Chardon company as vice president and general manager.

Officers Elected at Annual United Telephone Meeting

Election of B. M. Witmer of Harrisburg, Pa., as a vice president; Charles B. Fishel of LeMoyne, Pa., as a director, secretary and general auditor and Ray E. Garman of Carlisle, Pa., as auditor and assistant secretary of The

B. M. WITMER

United Telephone Co. of Pennsylvania in the annual stockholders and directors reorganization meetings held on May 5 has been announced by L. R. Thurston, president.

Mr. Witmer, a graduate of Franklin and Marshall College and a United director for the past three years has been appointed to fill the vice presidency

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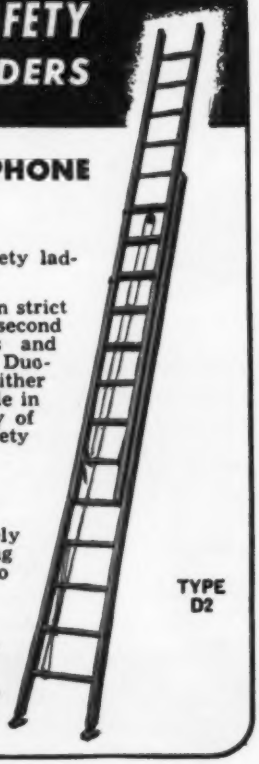

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C. B. FISHEL

held by H. W. Rasher, who is retiring after nearly 37 years service.

A graduate of Pennsylvania State University, Mr. Fishel has been associated with United Telephone for 28 years. He succeeds Mr. Rasher as a director, general auditor and secretary. Mr. Garman, another United Telephone veteran will fill posts formerly held by Mr. Fishel.

Mr. Rasher has headed United Telephone's accounting department for 27 years.

United directors reelected by the shareholders in their annual meeting are James H. Earley, Alden L. Hart,

H. W. RASHER

Ross B. Hartman, John C. Kelley, C. A. Scupin, John G. Siemons, Mr. Thurston and Mr. Witmer.

At the directors reorganization meeting, officers elected in addition to Mr. Witmer, Mr. Fishel and Mr. Garman were: Alden Hart, board chairman; L. R. Thurston, president and general manager; C. A. Scupin, John T. Naylor, vice presidents; Ross Hartman, treasurer and Ardella Davis, assistant treasurer.

Construction Addition on Lincoln (Neb.) T&T Begins

Following a groundbreaking ceremony on May 2, construction was started on a $1,750,000 addition to one of Lincoln (Neb.) Telephone & Telegraph Co.'s buildings in Lincoln. This building will accommodate the company's general offices, the Lincoln business office, long distance operating department, service department and equipment for local and long distance dialing. After its completion in August, 1959, the present general office building will be vacated.

Thomas C. Woods, Jr., president of Lincoln T&T, said that five stories will be added to the present three-story structure and a four-story wing will be built to the eastward.

Investment in the new building, land and equipment will exceed 8 million dollars, Merle M. Hale, vice president, said.

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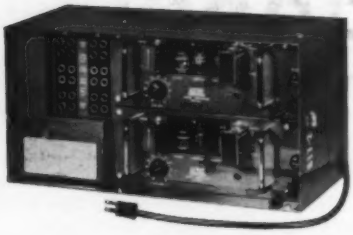

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Thoroughly field tested—60 were used to broadcast the Pasadena Rose Parade and the Rose Bowl Game.

Weight: 44 pounds.

Output Power: +24 dbm.

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Gain: at least 44 db; adjustable to minimum of 8 db.

Equiv. input noise: —115 dbm.

Input impedance (internal): 150/600 ohms ±5%, 30 to 15,000 cps.

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News on New Products

TECHNIQUES PERFECTED FOR EXTRUSION OF NEW RESIN—The Rex Corp. announces that techniques for extrusion of DuPont 100X perfluorocarbon resin have been perfected. This new resin is suitable for use as a hook-up wire insulation and as a jacketing material for coaxial constructions and multiple-conductor cables.

Of special interest to users of multiple-conductor cable is the fact that this new resin allows a 200° C jacket to be applied to larger O. D. cables than formerly possible by conventional Teflon extrusion. Production methods indicate that a considerable saving can be realized over Teflon tape-wrapped jackets.

Preliminary tests of hook-up wire insulated with 100X resin indicate the insulation to be capable of meeting MIL-W-16878B, however, the greater promise lies in the field of dielectric cores for coaxial cable and multiple conductor cable jackets. This is borne out by the fact that virtually any continuous length of core or jacket is possible. Extensive tests confirm the suitability of 100X for cores and jackets of applicable coaxial cables in MIL-C-17B.

General properties which can be expected of this new DuPont 100X material are as follows: Dielectric strength (short time) from 2000 to 4000 volts; mil —1 to 10 mil thickness. Volume resistivity greater than 10 15 ohm/cm with a dissipation factor of .0002 and temperature range (up to) 200° C. This new material has no moisture absorption and is chemically inert. Request NP872.

•

HIGH CONDUCTIVITY ADDED TO STRENGTH AND CORROSION RESISTANCE IN NEW BRONZE—A bronze alloy having about five times the electrical conductivity of such alloys now being used for high-strength, high-corrosion-resistance applications has been developed by Chase Brass & Copper Co., a subsidiary of Kennecott Copper.

The new metal, called silnic bronze, is a nickel-silicon-bronze alloy that offers unusual properties for this class of alloy. Not only does silnic bronze have the unique combination of high electrical conductivity with extremely high yield strength and corrosion resistance, but it maintains these properties at elevated temperatures, Chase reports. These characteristics make the material ideally suited to manufacture of electrical and electronic parts and hardware.

Silnic bronze, unlike other bronzes, can be obtained in three tempers, soft, cold-forming (heat-treatable), and hard (fully heat treated). Hard temper silnic bronze is used for parts subject to machining with or without moderate cold forming, and requires no additional heat treatment for full tensile and yield strength.

The cold-forming temper allows easy material flow for fabricating parts requiring severe cold working. Subsequent age hardening at 900°F. for 90 minutes gives the alloy its final desired proper-

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Chicago 5, Ill.

Please have the manufacturer send me without obligation the literature indicated by the following numbers:

NP872_____; NP873_____; NP874_____; NP875_____;

NP876_____; NP877_____; NP878_____; NP879_____;

NP880_____; NP881_____; NP882_____.

Name.....Title.....

Company.....

Street.....

Town and State.....

5/24/58

ties without scaling. Silnic bronze in its cold-forming temper will not spontaneously age at storage temperatures.

The alloy is free from silicon segregation, with its resultant planes, which is common to high-silicon bronzes. It has uniform distribution of strength and hardness through the entire cross section, and its properties are consistent through the whole range of sizes.

Chase silnic bronze is composed of 97.5 per cent copper, 1.9 per cent nickel, and 0.6 per cent silicon. It is available in a variety of cross sections and dimensions in straight length rod and bar, and coils of round, rectangular, and square rolled and drawn wire. Request NP873.

•

MULTI-CHANNEL SINGLE-SIDEBAND RADIO SYSTEM—A multi-channel single-sideband radio system operating in the 900 mc region has been successfully produced and tested by Federal Telecommunication Laboratories, a division of the International Telephone & Telegraph Corp.

According to William Sichak, associate director of FTL's radio communication laboratory, the prototype transmitter is one of the first designed for single-sideband operation in UHF communication, and marks another step forward in the search for more economical use of the overcrowded radio frequency spectrum.

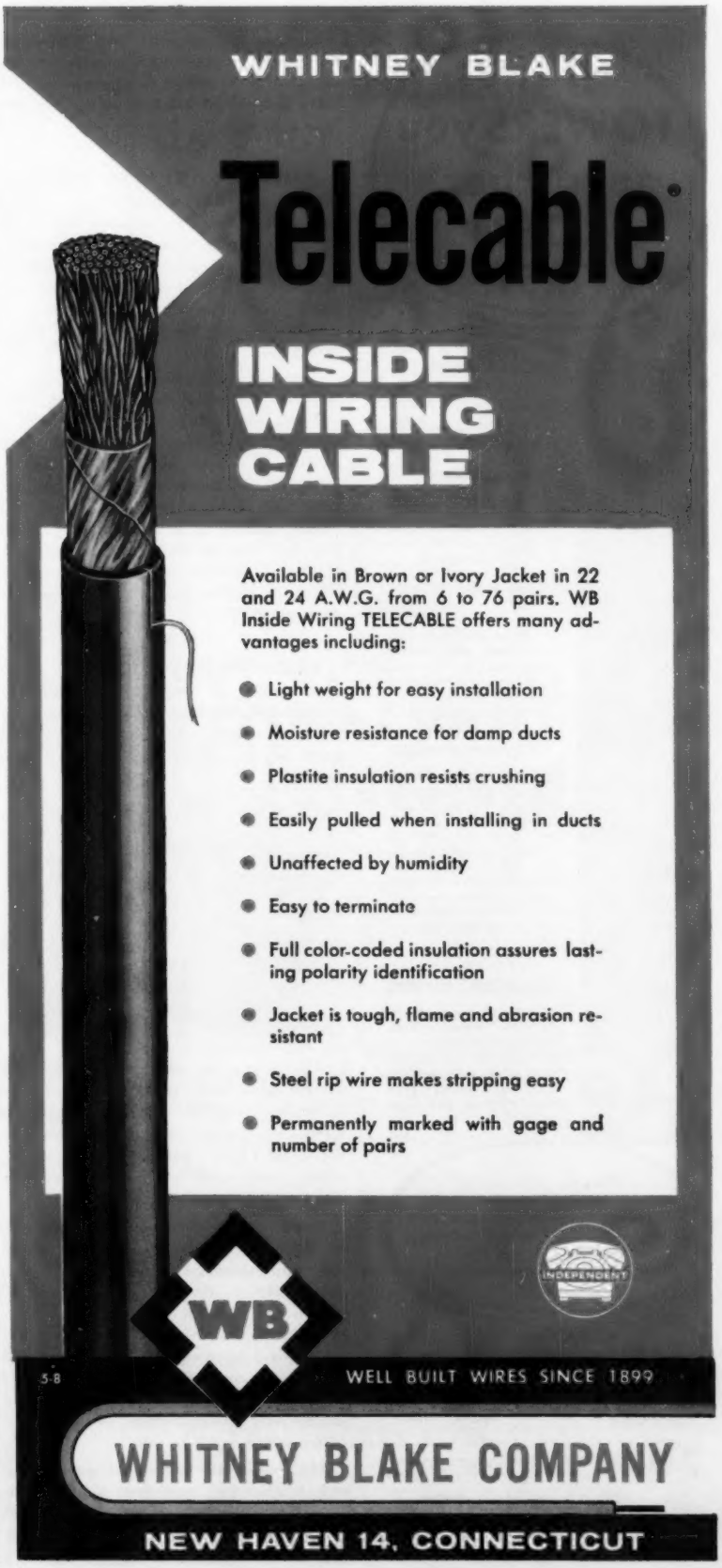
Although designed primarily for line-of-sight transmission, the single-sideband equipment is adaptable to over-the-horizon microwave through the use of bigger and larger power amplifiers. Proposed development plans will push the operating frequency up to 2000 or more megacycles.

The system will accommodate up to 120 telephone channels within a 500 kilocycle bandwidth, allotting just over 4 kilocycles to each channel. Present systems using other types of modulation, such as frequency or pulse modulation, are characterized by rather large bandwidths, usually of the order of 30 to 40 kilocycles per channel.

The new equipment was loop-tested over a 4-mile experimental circuit, with losses inserted to simulate a normal 30-mile line-of-sight circuit.

Experimental tests of the new equipment featured operation on extremely small amounts of power. Normally, talking power is amplified greatly before being transmitted by radio. Although at one time during the tests the power transmitted into the antenna was less than that emitted from a telephone handset, the speech could still be readily understood.

Total power required to light all the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Available in Brown or Ivory Jacket in 22 and 24 A.W.G. from 6 to 76 pairs. WB Inside Wiring TELECABLE offers many advantages including:
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Moisture resistance for damp ducts
Plastite insulation resists crushing
Easily pulled when installing in ducts
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Easy to terminate
Full color-coded insulation assures lasting polarity identification
Jacket is tough, flame and abrasion resistant
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√ Special Towers

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Close-up of a Rohn No. 30 Tower used for radio communications. Note guying arrangement, triangular tower design—natural "ladder" for antenna maintenance. This tower is easily erected—very moderate in cost.

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"Pioneer Manufacturers of TV and Communication Towers of All Kinds."

filaments and operate both transmitter and receiver is about 65 watts—1/15th of what is required to operate an ordinary household flat iron or toaster. Request NP874.

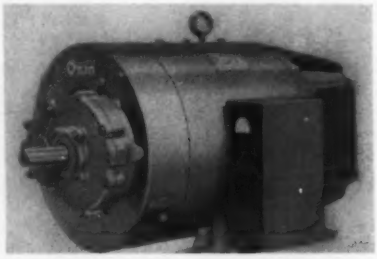
•

ROHN ENAMELING PROCESS PLANT—Rohn, manufacturer of TV, amateur and communication towers now adds a complete new enameling process plant to its recently expanded facilities. Applied as a rust-corrosion preventive finish on Rohn towers and tubing the coating process has been named "Rohn-Kote."

The specially developed process to prevent rust and corrosion includes a six-step method in which the item is cleaned in a special chemical bath, coated with zinc phosphate so that a specially developed enamel will impregnate and adhere to the surface, and finally baked in a special 375° oven. The full line of Rohn towers and mast tubing will be available with this special finish, as well as hot-dipped galvanizing. Request NP875.

•

EMERGENCY GENERATORS—Two new series of emergency generators, designed to provide low-cost protection against electric power outages, have been announced by D. W. Onan & Sons Inc.



The new generators are designed for tractor drive and are available in three sizes . . . 4,000, 7,000 and 12,000 watts, a.c. Each will furnish exactly the same 115/230-volt, 60-cycle, single-phase, three-wire current delivered by the commercial highlines.

Onan tractor-driven generators can be obtained in two different models—one with standard P.T.O. drive which can be driven through the power-take-off on any tractor; the other, a belt-driven unit. Both models provide ideal economical insurance against losses and inconveniences suffered when storms or mechanical breakdowns interrupt the commercial power supply, the company affirms.

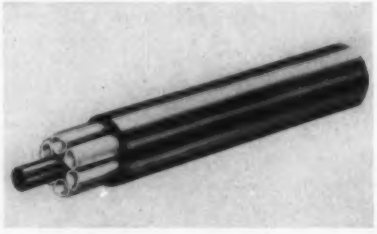
The power-take-off model is equipped with a gear box and stub shaft which is easily connected to the tractor with a tumbling rod. A drip-proof connection box mounted on the generator includes circuit breakers for over-load protection, voltmeter and convenient knock-outs.

The belt-driven generator has a spring-loaded, self-adjusting, sliding-type base which assures automatic belt tightening under varying conditions of load and belt stretch. A flat-belt, 5-inch-diameter pulley, circuit breakers and voltmeter are standard accessories included with this unit.

Both P.T.O. and belt-driven models are connected for dual-voltage—standard 115/230 volts single-phase, three-wire, a.c. In addition, all models have four slip rings which allow easy reconnection in the field to deliver their total rating in either 115-volt, two-wire or 230-volt, two-wire output. Request NP876.

•

SEMI-FLEXIBLE COAXIAL LINE—Prodelin, Inc. has announced a new broadband semi-flexible, air dielectric transmission line and companion connectors to be marketed under the registered trade name of Spir-O-line. For the first time the flexibility and high-power features typical of solid dielectric lines are provided in an air dielectric line while minimum attenuation and



the low VSWR characteristics of rigid air dielectric line are retained, the company reports.

Spir-O-line features a dielectric supporting structure between the aluminum outer conductor and the copper inner conductor. It employs high-density, 100° centigrade, low-loss polyethylene tubing under uniform radial compression to provide maximum air space with no direct air path between conductors. This construction permits a voltage rating increase of approximately 20 per cent over equivalent size semi-flexible lines. The lower attenuation of Spir-O-line permits higher average power ratings.

Another advantage of this new dielectric structure is the fact that continuous and intimate line contact with the inner conductor is maintained throughout with a minimum amount of tangential contact at the center conductor surface.

The avoidance of dielectric discontinuities typical in conventional transmission lines provides high efficiency and low VSWR, according to the com-

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and
Seasons go

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and winds do blow —

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and construction crews
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at all times —

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Angeles • New Orleans • New York • Oakland • Oklahoma City • Philadelphia • Phoenix
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pany. The manufacturing technique creates firm, concentric support for the inner conductor and keeps the dielectric structure under uniform stress, even on bends, to provide a broadband, low VSWR cable.

Prodelin has also eliminated the necessity for metalic or dielectric joints between antenna and transmitter terminals by supplying Spir-O-line in continuous lengths.

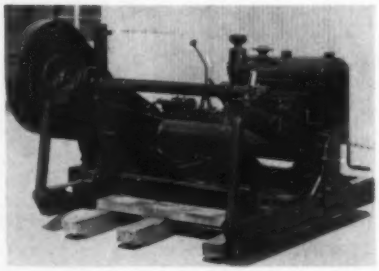
The company states that Spir-O-line cable provides a high degree of crush resistance because of the natural strength of its aluminum-alloy outer conductor and the radial support of the dielectric tubes. While the outer conductor is also highly corrosion resistant, the company supplies Spir-O-line with an optional non-contaminating plastic packet for such extreme conditions as direct burial, salt air, or underwater environments.

High temperature service for use up to 250° C is offered in Spir-O-line hi-temp cable where the dielectric structure is made of teflon.

Spir-O-line transmission lines terminate in standard EIA (RETMA) flanges and other specified dimensions. Spir-O-line cables have broadband characteristics and are usable up to the following cut-off frequencies: ⅜ inch to 15 Kmc/s; ½ inch to 10 Kmc/s; ⅞ inch to 5 Kmc/s; 1⅝ inch to 2.8 Kmc/s; and 3⅛ inch to 1.5 Kmc/s. Request NP877.

•

CABLE PULLER—The Pengo 5400 cable puller, a self-powered unit designed for stringing or reconductoring light distribution circuits, has been



announced by Petersen Engineering Co., Inc. Capable of loading and unloading reels up to 34 inches wide by 48 inches in diameter and weight 5,000 lbs., this new cable puller can be mounted on either a flat-bed truck or a trailer.

Powered by a 15-b.h.p. gasoline engine, the Pengo 5400 cable puller is rated to produce a maximum pull of 1,000 pounds at speeds up to three miles per hour. Its backstop enables the operator to shift from one gear to another without danger of tensioned line running back and causing damage.

The new Pengo 5400 cable puller raises or lowers the reels hydraulically in less than 60 seconds. In addition, a mechanical stop is provided to hold the reels once they are in the desired operating position. Request NP878.

•

HEAVY DUTY OFFSET BORING HEAD—The Pengo heavy-duty offset boring head, designed for welding to the bottom of any heavy-duty cast steel

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attracts the eye day or night, promotes more revenue. Colorful, clean, sturdy—the BN Booth is best for you, too!

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auger to greatly improve its performance, has also been announced by Petersen Engineering Co. Inc.

This new Pengo development employs the same teeth, pilot bit and other parts as used on the standard heavy-duty Pengo augers and the new boring head makes it possible to obtain the same excellent performance from conventional augers, the company states.

Other Pengo features embodied in the new development, are an added helix for more dirt-carrying capacity and a valve to prevent loss of dirt in the hole, etc. Request NP879.

•

UNDERFLOOR DUCT INSTALLATION—Two sizes of underfloor duct are combined in an unusual installation in the Forbes Building, under construction in Pittsburgh, Pa.

The duct, manufactured by the Spang-Chalfant division of The National Supply Co. is used to carry power and telephone lines to offices on the upper floor of the two-story building.

Standard duct, which is 3⅛ inches wide, was chosen for the power lines. Duct 7¼ inches wide, generally referred to as industrial duct, was specified for telephone lines, providing plenty of capacity for both present and anticipated future needs.

Installing the Spang underfloor wire distribution system for offices in the new Forbes Building, Pittsburgh.

Except for its greater width, the industrial duct is the same as the standard duct, each being constructed of heavy gauge steel and providing an outlet every 2 feet through which wires may be brought up. Standard three-duct junction boxes were used, the industrial duct taking up the same width as two runs of standard duct.

The ductwork was laid over a steel sub-flooring, after which concrete was poured for the floor. Four leveling screws on each junction box, and four leveling screws on the top plate of each box, made it easy to level the boxes with the floor. The Spang junction boxes are square in shape, providing plenty of space for connecting wires. The ductwork is painted a bright yellow for visibility, lessening the possibility

A typical junction box installation in the underfloor wire distribution system. Note how a run of standard duct and a run of industrial duct is accommodated along each side of a standard three-duct box.

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Then look to Lindsay, where prompt delivery of your order as specified is assured by fast, efficient, *personalized* service... backed by extensive warehousing of nationally known telephone supplies. Established in 1939, Lindsay is under second-generation management that believes a business can go only one way—forward.

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Telephone Refinisher
POLISHES
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AMERICA'S FINEST SPRAY WAX

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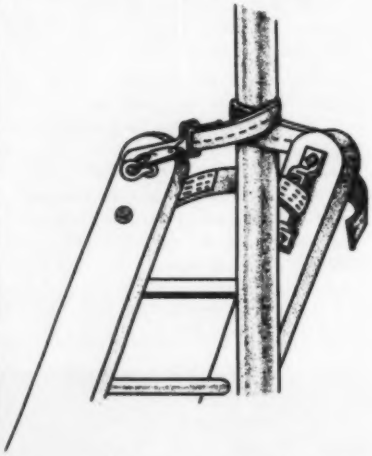
that a workman might fall over it. Request NP880.

•

NEW LADDER LASH—Rose Manufacturing Co. announces the development of the new Safe-Hi ladder lash, designed to provide safe ladder anchoring—vertical or horizontal—to posts, poles and similar anchors.

This new ladder lash is designed to eliminate the uncertainties of hand-tied knots. It can be attached to any ladder just by drilling four holes and bolting the ladder lash in place.

The Safe-Hi ladder lash is made of parachute webbing of 2800 pound tensile strength, with a forged steep snap that locks into eye bolt on the ladder rail. The workman simply passes the



strap around the anchor and snaps to the eye bolt. The tab end of the strap is then pulled through the adjustment slide until it is taut. This ladder lash can be placed around anchors up to 16 inches in diameter. The company recommends use of the new ladder lash with Safe-Hi pole grip and Safe-Hi ladder shoes. Request NP881.

•

WOOD PRESERVATIVE — Androc Chemical Co. has developed a new preservative which can be applied to damp wood using an ordinary kalsomine brush, an improvement over conventional chemical protectors which require dry wood for best results.

The preservative is known as Pentroc. Androc has developed several other new types over the past several years.

Pentroc may be applied to in-service utility poles, fence posts and building foundation timbers in contact with the ground, which do not require decorative painting or finishing. Request NP882.

The True Conqueror

"He that ruleth his spirit is better than he that taketh a city."—BIBLE.

General of Ind. Fills Two Newly-Created Positions

Two appointments to newly-created positions in the General Telephone Co. of Indiana have been announced by L. H. Meyer, president.

WILLIAM HESTON

William L. Heston has been named director of marketing and mechandising and Louis Pelis Jr. was appointed safety director.

Mr. Heston, who served as sales and merchandising supervisor prior to his

LOUIS PELIS JR.

recent appointment, has been employed by the Indiana company the last five years. He previously served as commercial engineer and commercial survey engineer.

A graduate of Purdue University, he later attended Indiana University. He is a navy veteran of World War II.

In his new position as safety director, Mr. Pelis will formulate, develop and administer practices and procedures for an effective safety program

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LASHING WIRE

You get a neat and long-lasting job every time you use PAGE Stainless Steel Lashing Wire! Ideal for lashing conductor cables (lead or neoprene covered) to a strand messenger by Neale or Western Electric Machine. Coils tailored to fit machine specified.

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Type 430 · for use with galvanized messengers
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Other fine-quality products · You can depend upon PAGE Strand (Stainless or Galvanized Steel) and PAGE Stainless Dead-End Wire · See your Telephone Supply Distributor, or write our Monessen, Pa., office.

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for safety's sake

QUANTITY • CONDITION • PROPER USE

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the complete line of genuine, approved** safety cans...

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5 gal. of gas. explode with the same force as 415 pounds of dynamite!

TODAY'S GREATER USE OF SOLVENTS HAS INCREASED YOUR NEED FOR:

SAFETY CANS: Rugged, super-strong for greater safety, longer life in handling flammable liquids. 7 sizes: 1 pt. to 5 gal.

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BENCH CANS: New design! Portable parts basket speeds handling small parts, keeps hands dry. Use as ½-gal. or gallon unit.

PLUNGER CANS: Dispense flammable liquids safely! Adjust to control amount used. Cleans easily. 3 sizes: Qt., ½-gal., or gallon.

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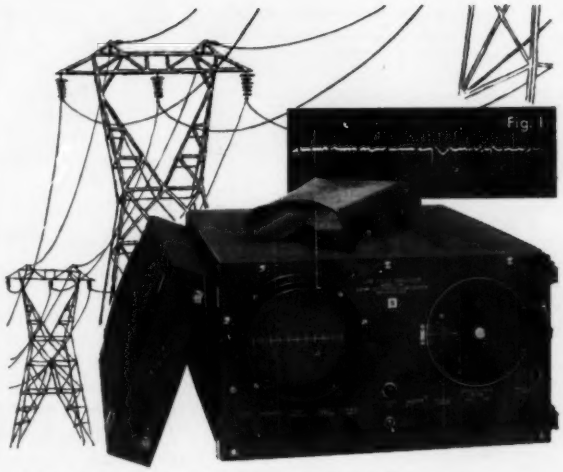

Figure 1. Display of 60 Kv line grounded at 27 miles.

Locate circuit faults exactly ...½ to 200 miles distant

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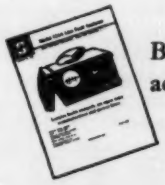
Use on any open wire line
Direct reading, simple to use
Use at carrier terminal, powerhouse, sub-station

Shorts, grounds or opens up to 200 miles away can be located within a few yards with the improved Sierra 124A Line Fault Analyzer. The instrument, operating on radar principles, sends a high amplitude pulse along the line under test. Discontinuities, even capacitors and transformer banks, appear clearly; a complete picture of the line and its condition appears on the radar-type "A" scope.

Two Pulse Widths

To insure maximum readability, two pulses — a 1 microsecond, 1,000 volt pulse or an 8 microsecond, 500 volt pulse —are provided. Other features include a sweep delay, movable distance step, sweep repetition rate of 60 cps and a high intensity flat faced cathode ray tube. Provision is made for camera attachment to the scope face.



Bulletin gives details, actual utility operating experiences

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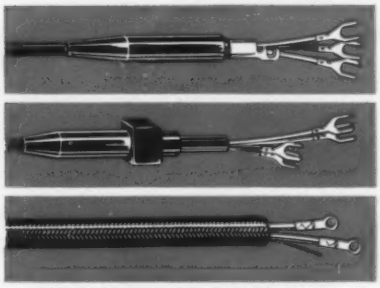

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- Nylon Operators' Cords and Switchboard Cords, with or without plugs.
- Neoprene Handset Cords with moulded strain reliefs.

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and maintain a continuing program of employe safety education.

A 12-year veteran with the company, Mr. Pelis began his telephone career as a lineman. Since then he has served as line foreman, general plant construction supervisor, and general plant training and safety supervisor.

IT&T Names W. C. Allen As Director, Manufacturing

William Carlton Allen has been named director, manufacturing—U. S. Group, International Telephone & Telegraph Corp., according to an announcement by Fred M. Farwell, executive vice president of IT&T, and head of the company's domestic divisions.

Mr. Allen, formerly director of manufacturing planning for Westinghouse Electric Corp., has had more than 25 years of manufacturing, engineering, management, and sales experience, including his most recent post as director of manufacturing for the atomic power and defense groups of Westinghouse.

For two years prior to joining Westinghouse in 1953, he was chief engineer for Hotpoint Co.

From 1949 to 1951, Mr. Allen was chief inspector and assistant to the vice president of Mergenthaler Linotype. He also served as budget officer for the manufacturing department and handled the estimating and programming of periscope production for Army Ordnance.

Earlier, Mr. Allen was manufacturing assistant to the vice president in charge of manufacturing, American Machine & Foundry Co.

During World War II he was chief naval architect for California Shipbuilding Corp. Following the war he was a naval architect and marine engineer, heading his own consulting firm, W. C. Allen, Ltd., and specializing in ship and shipyard building and welding and steel fabrication operations.

Mr. Allen studied mechanical engineering at Oklahoma A&M, and is a graduate (Class of '29) of the United States Naval Academy, Annapolis, Md., from which he received a B.S. degree in mechanical engineering. He took additional post graduate work at Annapolis in steam, electrical, mechanical and hydraulics engineering. He has a masters degree in marine engineering and naval architecture from Massachusetts Institute of Technology, where he specialized in welding and metallurgy and undertook a year's study of aeronautical engineering.

Following graduation from M.I.T. in 1934, he served for three years as assistant superintendent of hull, Puget Sound Navy Yard. From 1937 to 1940, he was battle fleet hull repair officer on the U.S.S. Medusa. He was retired from the Navy as senior lieutenant in 1940.

Philco Names Hockeimer Field Engineering Head

Henry E. Hockeimer has been promoted to manager of the field engineering department of Philco Corp.'s government and industrial division, H. E. Taylor Jr., industrial products marketing manager announced recently.

H. E. HOCKEIMER

Mr. Hockeimer has been with Philco since 1947, and has served in various field and headquarters assignments. He joined the G and I Division in 1951 as a project engineer on Philco's early microwave installations and has been assistant manager of field engineering since 1955.

A native of Winzig, Germany, Mr. Hockeimer attended high school in Breslau and studied electronics at the Breslau Technical Institute. He also studied industrial management and electronics at New York University after completing an electronics course at the RCA Institute.

He worked for the American Military Government in Germany from 1945-46 and served as a communications instructor with the New York National Guard from 1947-51.

Mr. Hockeimer is a member of the Institute of Radio Engineers.

Name Two to Willys Motors Sales, Advertising Posts

The appointments of James Beattie Jr. as assistant general sales manager and C. M. Ritchey as director of advertising and merchandising for Willys Sales Corp., Toledo, O. were announced recently by C. W. Moss, vice president and general sales manager.

Mr. Beattie, with Willys since 1949, has been western division manager with headquarters at San Francisco for the past year. He served as zone and regional manager in Minneapolis and Chicago and for six years represented the company in New York City, most recently as eastern division manager.

Mr. Ritchey joined Willys as Kansas City zone manager in 1953. He became manager of the Pittsburgh zone in 1955 and succeeded Mr. Beattie as eastern division manager in New York a year ago.

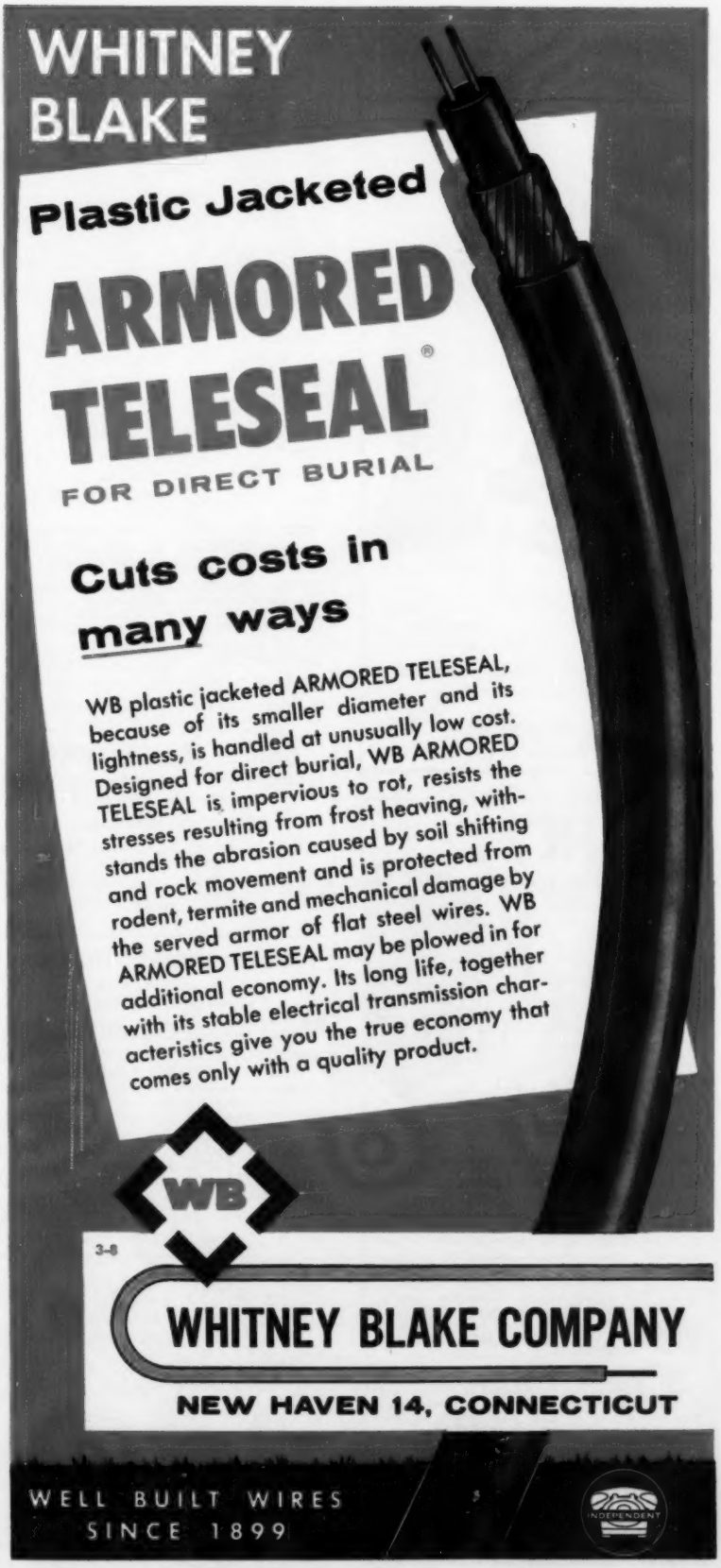
California Independent Installs Microwave

This month saw the completion of a new multi-channel microwave system by another Independent telephone company. The system, extending from San Bernardino to Bishop, Cal., was placed in service for the California Interstate Telephone Co.

The system is approximately 260 miles in length and contains eight intermediate repeaters. Five of the repeaters are of the straight through type while the other three are arranged for four-way operation with provision for local drops.

The terminals provide for 16 toll

Douglas W. Anderson, assistant to the vice president and general manager of the electronics division of Stromberg-Carlson, has been awarded a Sloan Fellowship for a year of advanced study at the School of Industrial Management of the Massachusetts Institute of Technology. He will spend 12 months at the institute studying fundamentals which underlie sound management action. Mr. Anderson will also complete the requirements for an M.S. degree in Industrial Management.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This back bone route is soon to be supplemented by an additional 32 channels between San Bernardino and Barstow and 43 channels between Inyokern and San Bernardino.

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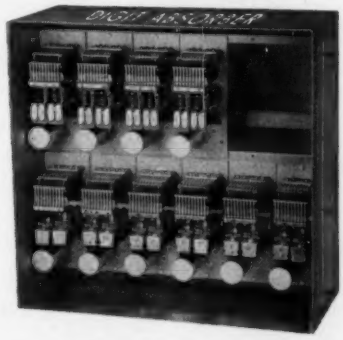

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